Electrical Engineering

Vol. 50
1931

REFERENCE INDEX

Volume 50 1931

Published by the American
Institute of Electrical Engineers
33 West 39th Street, New York, N. Y.

Annual Reference Index

To provide a comprehensive reference guide covering the contents of the twelve issues of ELECTRICAL ENGINEERING for 1931, a complete departure has been made from previously established style. Material covered is presented in four major divisions, each arranged in alphabetical order and each item generously cross-referenced. Divisions include the following:

1. Technical subject index embracing all non-departmental material published during the year.

2. Index of authors and contributors including a listing of all signed articles.

3. News and departmental division embracing (a) all Institute activities and (b) all other news and miscellaneous items published.

4. A biographical division containing the names and page references for all persons whose activities were recorded either in the "personal" or "obituary" departments, including also all other entries of a strictly personal nature.

Page allocation by Issues

January	1- 88
February	89-172
March	173-252
April	253-324
May	325-396
June	397-468
July (In two sections)	469-630
August	631-702
September	703-782
October	783-854
November	855-926
December	927-998

Division I—
Technical Subject Index

Accessories for Oil Filled Cable. Atkinson, Simmons ... 880
A-C. Distribution Circuits, Fuse Cut-Outs—Their Design and Application for (Abs.). Newton ... 903
A-C. Network for Portland, Oregon, An. Clark ... 944
Advance Planning of Long Distance Telephone Facilities (Abs.). McFarland ... 902
A.I.E.E. Standards. (See News Index-Standards)
Air and Moisture vs. Paper Insulation (Abs.). Whitehead, Hamburger ... 674
Airplane Flight Aided by Electricity. Green ... 654
Airway Beacons, Lighting. Cartland ... 31
Alternators Now Fully Automatic, Small. Wetzel ... 23
Analogs for Difficult Problems, Electric. Skilling ... 862
Application for A-C. Distribution Circuits, Fuse Cut-Outs—Their Design and (Abs.). Newton ... 903
Application, General Power. (Com. rept.) ... 880
Application of Hydrogen Cooling to Turbine-Generators. Ross ... 211
Application of the Helical Groove to Slip-Rings and Commutators. Little ... 437
Application of Light, Production and. (Com. rept.) ... 894
Application of Primary Distribution Fuses (Abs.). Sanford ... 902
Application to Iron and Steel Production. (Com. rept.) ... 899
Application to Marine Work. (Com. rept.) ... 899
Application to Mining Work. (Com. rept.) ... 898
Arc, Extinguishing the Short A-C. ... 942
Arc Welding in Building Construction. Vinther ... 785
Arcing Faults on Power Lines, Field Studies of. Eaton, Peck, Dunham ... 857
Arcs and Glow Discharges, Cathode Drop in (Abs.). Mackeown ... 755
Arcs, Experiments With Short. Schrum, Wiest ... 827
Arcs in Low-Voltage A-C. Networks. Slepian, Strom ... 955
Arcs, Oscillograph Tests and Low-Current. Attwood, Dow, Krausnick ... 949
Arcs, Various Factors Aid Extinction of. Browne ... 952
Arresters for 208.4-kv. Service, Lightning ... 41
Artificial Sunshine for the Modern Office ... 357
Attenuation and Successive Reflections of Traveling Waves. Dowell ... 478–502
Australasia as Seen by an Engineer. Lincoln ... 12
Automobiles vs. Railways for Urban Transportation. Gordon ... 4
Automatic and Supervisory Control, Operating Experiences With ... 883
Automatic and Supervisory Control of Substations. Ambuhl ... 890
Automatic Arc Welding. Koch ... 888
Automatic Control for Variable Ratio Frequency Converters. (Abs.). Shively, Whitlow ... 901
Automatic Control of Substations. Stemper ... 888
Automatic Operator Improves (Hydro) Efficiency. Kerr ... 14
Automatic Power Plants for Telephone Offices. Young, Lunsford ... 432
Automatic, Small Alternators Now Fully. Wetzel ... 23
Automatic Speed Regulation. Ashbaugh ... 363
Automatic Stations. (Com. rept.) ... 542
Auto-Transformers, Transient Voltages in. Palueff ... 664
Average-Voltage Method for Transformer Loss Measurement. Boyajian ... 670

B

Backfires in Mercury Rectifiers. Slepian, Ludwig ... 793
Balancing Cables by Inductive Networks. Pupin ... 933
Beacons, Lighting Airway. Cartland ... 31
Benefited by Engineering Progress? Has Man. (See Engg. Foundation Symposium)
Brazed Joints for Electric Conductors. Martin ... 434
Building Construction, Arc Welding in. Vinther ... 785
Building Construction, Electric Welding Advances in Modern ... 133
Burn-Off Tests in Low Voltage Networks. Sutherland, MacCorkle ... 862

C

Cable, Accessories for Oil Filled. Atkinson, Simmons ... 880
Cable Arcs, Insulation Material Aids Extinction of. Slepian, Strom ... 955
Cable Deterioration, Predetermination of (Abs.). (1930) ... 28
Cable, Economics of High Voltage. Roper ... 874
Cable Extended, Telephone Toll. Calderwood, Smith ... 736
Cable, High-Speed Submarine. Milner, Randall ... 537
Cable Oils, Some Electrical Characteristics of (Abs.). Race ... 673
Cable Sheaths, Proximity Effect in. Dwight ... 955
Cable, Simplicity and Economy of Oil Filled ... 874
Cable Systems, Layout of Oil Filled. Shanklin, Buller ... 873
Cable, Tape-Armored Telephone Toll (Abs.). Nystrom ... 902
Cable Telegraphy, Interference in Ocean. Milnor ... 261
Cable Temperatures at Variable Loading. Church ... 944
(Cables) Air and Moisture vs. Paper Insulation (Abs.). Whitehead, Hamburger ... 674
(Cables) Burn-Off Tests in Low Voltage Networks. Sutherland, MacCorkle ... 662
Cables by Inductive Networks, Balancing. Pupin ... 933
(Cables) Equivalent Circuits of Imperfect Condensers (Abs.). Dawes, Goodhue ... 676
(Cables) Fundamental Properties of Impregnated Paper (Abs.). Whitehead, Kouwenhoven ... 674
Calculating Load Division in Distribution Systems (Abs.). Almquist ... 900
Calculation of Generator Heat Losses (Abs.) Soderberg ... 439
Calculation of Synchronous Machine Constant (Abs.). Kilgore ... 961
Calculations for Inclined Catenary. Picken ... 732
Calorimeter Measurement of Stray-Load Losses (Abs.). Floyd, Dunbar ... 786
Carrier Communication Economical for Long Distances. Stewart ... 810
Catenary, Calculations for Inclined. Pickens ... 732
Catenary Construction for the Cleveland Terminal. Clement, Richards ... 734
Cathode Drop in Arcs and Glow Discharges (Abs.). Mackeown ... 755
Cement Industry, Electricity in the. Rogers ... 18
Characteristics of Oil Filled Cable. Shanklin, Buller ... 873
Chemical Research in the Field of Dielectrics (Abs.). (1930) ... 28
Circle Diagrams for Short Lines. Owens ... 871
Circuit Breaker Field Tests on Standard and Oil-Blast Explosion-Chamber Oil Circuit Breakers (Abs.). Spurck, Strang ... 740
Circuit Breaker, Oil-Blast. Prince, Shouse ... 184
Circuit Breakers, Field Tests on ... 744
Circuit Distortion, Harmonic Generation by Grid (Abs.). Turnau, Chambers, Fisher ... 960
Circuit Interrupters, Development Trends in. MacNeill ... 260
Circuit Units Adopted by I.E.C., Magnetic. Kennelly ... 133
Circuits, A Concentrator for Printing-Telegraph. Blanton ... 431
Circuits for Relay Applications, Non-Linear. Suits ... 963
Circuits of Imperfect Condensers, Equivalent (Abs.). Dawes, Goodhue ... 676
Circuits, Transient Oscillations in Distributed. Bowley ... 949
Civic Affairs, The Engineer in. Johnson ... 737
Cleveland Terminal, Catenary Construction for the. Clement, Richards ... 734
Clinical Sunlight—Natural and Artificial. Downes ... 811
Color Console for Theater Lighting ... 209
Committee Reports, Technical
Application to Iron & Steel ... 899
Application to Marine Work ... 899
Application to Mining Work ... 898
Automatic Stations ... 542
Communication ... 899
Education ... no report
Electrical Machinery ... 961
Electrochemistry & Electrometallurgy ... 870
Electrophysics ... 575, 632
Electric Welding ... 557
General Power Applications ... 550
Instruments & Measurements ... 557
Power Generation ... 669
Power Transmission & Distribution ... 617
Production & Application of Light ... 894
Protective Devices ... 634
Research ... 627
Transportation ... 630
Communication (Com. rept.) ... 899
(Communication) A Concentrator for Printing Telegraph Circuits. Blanton ... 431
Communication and the New York Stock Exchange, Electric. Worcester ... 255
Communication Economical for Long Distances, Carrier. Stewart ... 810
Communication Facilities, Joint Study Improves. Booker, Clark ... 807
Communication (Facilities) in a Metropolitan (Power) System. Juhnke ... 809
Communication in the New Waldorf-Astoria ... 906
Communication in the Niagara Hudson (Power) System. Bundy ... 805
Communication on the Arkansas-Louisiana-Mississippi Interconnected System. Stewart ... 810
(Communication) Orient Turns to Automatic Telephones. Chow ... 747
(Communication) Overseas Radiotelephone Service. Cowan ... 476
Communication Plays Its Part in Electric Power System Operation ... 803
(Communication) Power Supply for Telegraph Service (Abs.). Griffith ... 742
(Communication) Power Supply for Telephone Service. Young, Lunsford ... 432
(Communication) Radiotelephone Service is Expanding. Pillod ... 744
Communication Services of Electric Utilities, Underlying Considerations. Conwell, Keenan, Craig, Briggs ... 803
(Communication) Telegraph Testing Machine. Bramhall ... 803
(Communication) Telegraph Toll Cable Extended. Calderwood, Smith ... 736
(Communication, power system) Underlying Consideration of the Problem Outlined. Conwell, Keenan, Craig, Briggs ... 803
Commutation and Current Collection in Hydrogen. Baker ... 205
Commutators, Helical Grooves in Slip-Rings and. Little ... 437
Compact Industrial Control ... 946
Concentrator for Printing-Telegraph Circuits, A. Blanton ... 431
Condensers, Equivalent Circuits of Imperfect (Abs.). Dawes, Goodhue ... 676

Conductivity of Insulating Oils (Abs.). (1930) 26
Conductivity of Insulating Oils (Abs.). Whitehead 672
Conductor Surface, Corona vs. Weidlein 898
Conductors, Brazed Joints for Electric. Martin 434
Constants, Synchronous Machine (Abs.) 961
Control, Compact Industrial 885
Control, Electron Tubes for Industrial (Abs.). King 831
Control for Variable Ratio Frequency Converters, Automatic (Abs.). Shively, Whitlow 901
Control Groups Simplify Operation. Stanley, Wood 128
Control of a Generating Station, Supervisory Automatic. Stanley 892
Control of Interconnected Networks, Tie-Line (Abs.). Purcell, Powel 754
Control of Substations, Automatic. Stamper 888
Control of Substations, Automatic and Supervisory. Ambuhl 890
Control, Operating Experiences with Automatic and Supervisory 888
Converters, Automatic Control for Variable Ratio Frequency. Shively, Whitlow 901
Cooling for Turbine-Generators, Hydrogen. Ross 211
Cooperative Electrolysis Survey in Louisville, Ky. White 100
Cooperative Study of Power System Communication. Booker, Clark 807
Cooperative Work on Joint Pole Use. Martin, Huber 203
(Coordination, Inductive) Cooperative Work on Joint Pole Use 203
Coordination, Radio (Abs.). Campbell, Kalb 756
Coordination, Telephone and Power Practises as They Affect Inductive. Harrison, Silver 176
Coordination—The Essence of Modern Engineering. Lee 512
Corona and Line Surges. Skilling 798
Corona and Line Surges (Letter). Bewley 909
Corona vs. Conductor Surface. Weidlein 898
Correlation of Induction Motor Design Factors (Abs.). Hoover 754
Cracking Oil by Electricity. Rowland 288
Current Collection in Hydrogen Atmosphere. Baker 266
Cusps in the Speed Torque Curves of Induction Motors. Trickey 939
Cut-Outs—Their Design and Application for A-C. Distribution Circuits, Fuse (Abs.). Newton 903

D

Dairy Plants, Electricity in Modern. Dreux, Brunner 285
D-C. Power for Industrial Plants. Abbiss, West 329
Depression, Progress is the Way out of. Berresford 947
Design of Catenary System for Cleveland Union Terminal. Clement, Richards 734
Desirable Accuracies in Instrument Transformers. Wentz 657
Detecting Hidden Fissures in Rails. Drake 122
Determination of Synchronous Machine Constants by Test (Abs.). Wright 961
Determining the Flexibility of Mica Sheets 336
Development of a Relay Protective System. Stauffacher 268
Development of Gaseous Tube Lighting. Moore 648
Development Trends in Circuit Interrupters. MacNeill 260
Dielectric Research, Trend in. (1931). Whitehead 967
Dielectrics, Chemical Research in the Field of (Abs.). (1930) 28
(Dielectrics) Conductivity of Insulating Oils (Abs.). (1930) 26
(Dielectrics) Impregnated Paper Insulation (Abs.). (1930). Hamburger 27
(Dielectrics) Insulation Research Turns Again to Fundamentals. (1930) 24
(Dielectrics) Predetermination of Cable Deterioration (Abs.). (1930) 28
Dielectrics, Thermal Breakdown of Solid (Abs.). Moon 676
(Dielectrics) Year's Efforts Show Commendable Progress (1930). Whitehead 24
Difficulties in Measuring Machine Noise. Bailey 340
Discharges, Cathode Drop in Arcs and Glow (Abs.). Mackeown 755
Distribution Circuits, Fuse Cut-Outs—Their Design and Application for A-C. (Abs.). Newton 903
Distribution Systems for Industrial Plants (Abs.). McLain 831
Distribution From Mokelumne Plants, Power. Wright, Dexter 713
Distribution Fuses, Application of Primary (Abs.). Sanford 903
Distribution Networks, Vertical A-C. Kehoe, Jones 292
Distribution, Power Transmission and. (Com. rept.) 617
Distribution Substation, Impulse Voltage Tests on a 4.8-kv. (Abs.). Collins, Piepho, Torok 901
Distribution Systems, Calculating Load Division in (Abs.). Almquist 900

E

Economic Loading of Generating Stations. Stahl 722
Economics of High Voltage Cable. Roper 874
Education. (Com. rept.) ..... No 1931 report
Education, Industry versus Technical 8
Effect of Transient Voltages on Power Transformers— III —Non-Resonating Auto Transformers. Paluel 664
Effect of Wave Form on Operation of Induction Relays (Abs.). Robinson 900
Effects of Electric Shock? What Are. Kouwenhoven, Langworthy 406
Effects of Unbalanced Faults, Some. Evans, Wright 415
Elastic Supports for Rotating Machinery. Hull, Stewart 347
Electric Analogs for Difficult Problems. Skilling 862
Electric Arc Welding in Building Construction. Vinther 785
Electric Communication and the New York Stock Exchange. Worcester 255
Electric Power in the Lumber Industry. Onstad 92
Electric Power in the Steel Industry. Stoltz 410
Electric Power in Urban Transportation. Gordon 4
Electric Power in the Wood Products Industry (Abs.). Carey, Howe 753
Electric Resistance Brazing. Martin 434
Electric Shock, Nerve Injuries From. Kouwenhoven, Langworthy 929
Electric Shock, What Are Effects of? Kouwenhoven, Langworthy 406
Electric Waves, Propagation of. (Com. rept.) 652
Electric Welding. (Com. rept.) 557
Electric Welding Advances in Modern Building Construction 133
Electrical Characteristics of Cable Oils, Some (Abs.). Race 673
Electrical Distribution Systems for Industrial Plants (Abs.). McClain 831
"Electrical Engineering." Hutchinson 3
"Electrical Engineering." Lee 3
Electrical Equipment for Oil-Field Operations (Abs.). Hill, SeLegue 753
Electrical Machinery. (Com. rept.) 561
Electrical Measurements of Sound Absorption (Abs.). Albert, Bullis 755
Electrical Porcelain. Kraner 209
Electrical Solutions of Problems of Regular Scheduled Flight. Green 654
Electricity in Modern Dairy Plants. Dreux, Brunner 285
Electricity in the Cement Industry. Rogers 18
Electrification Improves Suburban Service, Lackawanna. Moreland 185
Electrochemistry and Electrometallurgy. (Com. rept.) 570
Electrophysics. (Com. repts.) 575, 652
Electrolysis Survey at Louisville, Ky. White 100
Electron Tubes for Industrial Control (Abs.). King 831
Electron, Your Nimble Servant—the. Compton 192
Engineer in Civic Affairs, The. Johnson 727
Engineering and Human Happiness. Lee, Wright, Tally, Porter, Stuart 641
Engineering, Coordination—The Essence of Modern. Lee 512
Engg. Foundation Research Narratives
Clinical Sunlight-Natural and Artificial Downs 511
Konel—A Substitution for Platinum. Lowry 650
Magnetic "Iron" Perfected by Research. Yensen 475
Voice Training on a Scientific Basis. Stanley. (See also Letters to the Editor —News Index) 752
Engineering Foundation Symposium
Engineering and Human Happiness. Lee, Wright, Tally, Porter, Stuart 641
Engineering Progress—1731-1831-1931. Insull 741
Has Man Benefited by Engineering Progress? Mees 643
Progress is the Way out of Depression. Berresford 947
The Way to Progress and Prosperity. Grunsky 812
Why Apply Science? Howe 861
(See also Letters to the Editor, News Index)
Engineering Progress? Has Man Benefited by. Mees. (See also Engg. Foundation symposium) 643
Engineering Progress —1731-1831-1931. Insull 741
Engineer's Duty to Himself and to the Public. Lee 125
Equivalent Circuits of Imperfect Condensers (Abs.). Dawes, Goodhue 676
Evolving a Modern Protective Relay System. Stauffacher 268
Experiences with Grounded-Neutral Y-Connected Potential Transformers on Ungrounded Systems. Weller 106
Experiments with Short Arcs. Schrum, Wiest 827
Experimental Lightning Protector for Insulators, An. Torok 478–502
Experimental Studies in the Propagation of Lightning Surges on Transmission Lines. Brune, Otto, Eaton 478–502
Experimental Studies of Arcing Faults on a 75-Kv. Transmission System. Eaton, Peck, Dunham 857
Expulsion Fuse, The. (Abs.). Slepian, Denault 903
Extinction of Cable Arcs, Insulation Material Aids. Slepian, Strom 955
Extinction of Short A-C. Arcs. Browne 952
Extinguishing the Short A-C. Arc 948

F

Faults on Three-Phase Systems, Simultaneous (Abs.). Clarke 970
Faults, Some Effects of Unbalanced. Evans, Wright 415
Federal Regulation of Water Power Development, Some Aspects of. Bonner 35
Field Harmonics in Induction Motors. Trickey 939
Field Studies of Arcing Faults on Power Lines. Eaton, Peck, Dunham 857
Field Tests on Circuit Breakers 744
Field Tests on Thyrite Arresters. McEachron, Wade 290
Field Tests with Artificial Lightning 487
Field Tests with Natural Lightning 490
Field Transients in Magnetic Systems (Abs.). Weber 961
Flexibility of Mica Sheets, Determining the 336
Fog-Type Insulators Eliminate Transmission Line Flashovers 101
Forecasting Population for Engineering Purposes (Abs.). Holson 902
Forecasting, Snow Surveys and Hydro (Abs.). Boardman 756
Foreign Job? What of the. Thomas 21
Fuel Utilization, Progress in 113
Fundamental Basis for Distance Relaying. Lewis, Tippet 430

Fundamental Properties of Impregnated Paper (Abs.). Whitehead, Kouwenhoven 674
Fuse Cut-Outs—Their Design and Application for A-C. Distribution Circuits (Abs.). Newton 903
Fuse, The Expulsion (Abs.). Slepian, Demault 903
Fuses, Application of Primary Distribution (Abs.). Sanford 903

G

Gaseous-Tube Lighting, Development of. Moore 648
General Power Application. (Com. rept.) ... 580
Generating Station, Riverbend Steam-Electric 718
Generating Station, Supervisory Automatic Control of a. Stanley 892
Generating Stations, Economic Loading of. Stahl 722
Generation by Grid Circuit Distortion, Harmonic (Abs.). Terman, Chambers, Fisher 966
Generation, Power. (Com. rept.) 602
Generator Heat Losses, Calculation of (Abs.). Soderberg 429
Generators, Hydrogen Cooling for Turbine. Ross 211
Governor Performance During System Disturbances. Buell, Caughey, Hunter, Marquis 37
Graphical Construction of Hyperbolic Functions. Helwig 117
Greater Efficiency for Low-Head Hydro. Jessop, Powell 118
Grid Circuit Distortion, Harmonic Generation by (Abs.). Terman, Chambers, Fisher 966
Grounded Wires, Mutual Impedance of (Abs.). Foster 660
Grounding, Present Practise in System. Powell 638

H

Harmonic Generation by Grid Circuit Distortion (Abs.). Terman, Chambers, Fisher 966
Harmonics in Induction Motors, Field. Trickey 939
Has Man Benefited by Engineering Progress? Mees. (See also Engg. Foundation symposium) 643
Heat Losses in Large Turbine-Generators (Abs.). Soderberg 429
Helical Grooves in Slip-Rings and Commutators. Little 427
High-Speed Submarine Cable. Milnor and Randall 337
Hydraulic and Electrical Possibilities of High-Speed, Low-Head Developments. Jessop, Powell 118
Hydro Efficiency, Automatic Operator Improves. Kerr 14
Hydro Forecasting, Snow Surveys and (Abs.). Boardman 756
Hydro, Greater Efficiency for Low-Head. Jessop, Powell 118
Hydroelectric Project, Mokelumne. Orellin. 705
Hydrogen Atmosphere, Current Collection in. Baker 266
Hydrogen Cooling for Turbine-Generators. Ross 211
Hyperbolic Functions, Graphical Construction of. Helwig 117

I

I.E.C., Magnetic Circuit Units Adopted by. Kennelly 133
Impedance of Grounded Wires, Mutual (Abs.). Foster 660
Impregnated Paper, Fundamental Properties of (Abs.). Whitehead, Kouwenhoven 674
Impregnated Paper Insulation (Abs.). (1930). Hamburger 27
Improved (Arc) Welding Generator, An. Blankenbuehler 666
Impulse Tests Made on Substations. Southgate, Brookes, Whitehead, Roman 354
Impulse Voltage Tests on a 4.8-Kv. Distribution Substation (Abs.) Collins, Piepho, Torok 901
Inclined-Catenary Calculations. Pickens ... 732
Indicating Meter for Measurement and Analysis of Noise. Castner, Dietze, Stanton, Tucker 342
Induction, Low-Frequency. Conwell, Warren 276
Induction Motor Slot Combinations. Kron. 937
Induction, Noise-Frequency. Wills, Blackwell 279
Induction Regulator Noise. Foltz, Shirk ... 352
(Inductive Coordination), Cooperative Work on Joint Pole Use 203
Inductive Coordination, Telephone and Power Practises as they Affect. Harrison, Silver 176
Industrial Control, Compact 885
Industrial Control, Electron Tubes for (Abs.). King 831
Industrial Plants, D-C. Power for. Abbis, West 329
Industrial Plants, Distribution for (Abs.). McLain 831
Industrial Power for Better Operating Efficiency, Interchange of. Skinkle 365
Industry, Electricity in the Cement. Rogers 18
Industry, Electric Power in the Lumber. Onstad 92
Industry, Electric Power in the Steel. Stoltz 410
Industry, Electric Power in the Wood Products (Abs.). Carey, Howe 753
Industry's New Responsibilities. Robertson 718
Industry, Stabilization of. Swope 816
Industry *vs.* Technical Education 8
Injuries From Electric Shock, Nerve. Kouwenhoven, Langworthy 929
(Instruments) Airplane Flight Aided by Electricity. Green 654
Instruments and Measurements. (Com. rept.) 587
Instrument Transformers, Desirable Accuracies in. Wents 657
(Instruments), Vacuum-Tube Device for Current-Balance Telemeters. Lenehan, MacGahan 510
Insulating Oils, Conductivity of (Abs.). (1930) 26
Insulating Oils, Conductivity of (Abs.). Whitehead 672
Insulation, Air and Moisture *vs.* Paper (Abs.). Whitehead, Hamburger 674
(Insulation) Chemical Research in the Field of Dielectrics (Abs.). (1930) 28
(Insulation) Equivalent Circuits of Imperfect Condensers (Abs.). Dawes, Goodhue 676
(Insulation) Fundamental Properties of Impregnated Paper (Abs.). Whitehead, Kouwenhoven 674
Insulation, Impregnated Paper (Abs.). (1930). Hamburger 27
Insulation Material Aids Extinction of Cable Arcs. Slepian, Strom 955
(Insulation) Predetermination of Cable Deterioration (Abs.). (1930) 28
Insulation Research Advances are Recorded 672
Insulation Research Turns Again to Fundamentals. (1930) 24
(Insulation) Some Electrical Characteristics of Cable Oils (Abs). Race 673
(Insulation) Thermal Breakdown of Solid Dielectrics (Abs.). Moon 676
(Insulation) The Trend in Dielectric Research. (1931). Whitehead 967
(Insulation Research) Year's Efforts Show Commendable Progress. (1930). Whitehead 24
Insulation Variability (Abs.). Holmes 675
Insulator Lifts 20-Ton Load, Suspension ... 671
Insulators Eliminate Transmission Line Flashovers, Fog-Type 101
Interchange of Industrial Power for Better Operating Efficiency. Skinkle 365
Interconnected Networks, Tie-Line Control of (Abs.) Purcell, Powel 754
(Interconnection), Interchange of Industrial Power for Better Operating Efficiency. Skinkle 365
Interconnection of the 25- and 60-Cycle System of the Union Elec. Lt. & Pwr. Co. (Abs.). Nelson, Hough 901
Intercontinental Radiotelephone Service From the United States. Pilliod 748
Interference in Ocean Cable Telegraphy. Milnor 231
Interurban Cars Secure High Speed at Low Cost, New 932
Iron and Steel Production, Application to. (Com. rept.) 590
Irregularities in Speed-Torque Curves of Induction Motors 936

J

Joint Pole Use, Cooperative Work on. Martin, Huber 203
Joint Study Improves Communication Facilities. Booker, Clark 807

K

KDKA's New Station, Power Equipment for. Davis 865
Kindling of Electric Sparkover Based on Lichtenberg Figures (Abs.). Magnusson 756
Konel—A Substitute for Platinum. Lowry. 659

L

Lackawanna Electrification Improves Suburban Service. Moreland 185
Layout of Oil Filled Cable Systems. Shanklin, Buller 878
Lee Answers Governor Pinchot, President (Lehigh University)—1930 Conf., Industry *vs.* Technical Education 8
Lichtenberg Figures, Kindling of Electric Sparkover Based on (Abs.). Magnusson 756
Light Beams Operate Traffic Signals. Hitchcock 182
Light, Production and Application of. (Com. rept.) 594
Lighting Airway Beacons. Cartland 31
Lighting, Color Console for Theater 259
Lighting, Development of Gaseous Tube. Moore 648
(Lighting) Artificial Sunshine for the Modern Office 357
(Lighting) Clinical Sunlight, Natural and Artificial. Downes 511
Lighting, Development of Gaseous Tube. Moore 648
Lighting, Neon Tube Sign. Kober 650
(Lighting) Unity Power Factor for Neon Tube Signs. McNeely, Law 856
Lightning Arresters for 268.4-Kv. Service .. 41
Lightning Characteristics—Induced Voltages—Direct Strokes—Coordination—Transmission. Peek 478–502
Lightning Discharge and Traveling Waves, Theories of 481
Lightning Discharges and Line Protective Measures. Fortescue, Conwell 478–502
Lightning Disturbances on Transmission Lines (Abs.). Jackson, Warner 903
Lightning Experience on the 132-Kv. Trans. Lines of the American Gas and Elec. Co., 1929. Sporn 478–502
(Lightning), Field Test on Thyrite Arresters. McEachron, Wade 200
Lightning, Field Tests With Artificial 487
Lightning, Field Tests With Natural 490
Lightning Investigation Continues. (Alcoa) Tennessee. Housley 30
Lightning Investigation on a Wood Pole Transmission Line. Pittman, Torok. 478–502
Lightning Investigation on the Appalachian Elec. Pwr. Co.'s Transmission System. Gross, Cox 478–502
Lightning Investigations on the Trans. System of the American Gas and Elec. Co., 1930. Sporn, Lloyd 478–502
Lightning Investigation on Transmission Lines—II. Lewis, Foust 478–502
Lightning Investigation on the 230-Kv. System of the Penn Pwr. & Lt. Co. (1930). Bell, Price 478–502
Lightning Surges, Protection Against 493
Lightning Symposium 478–502
Lightning Tests Made on "Surge-Proof" Transformers, Severe 822

Lightning vs. System Operation 501
Load Division in Distribution Systems, Calculating (Abs.). Almquist 900
Loss Measurement, Average-Voltage Method for Transformer. Boyajian 670
Losses, Calculation of Generator Heat (Abs.). Soderberg 429
Losses, Calorimeter Measurement of Stray-Load (Abs.). Floyd, Dunbar 756
Losses in Mercury Rectifier Transformers. DeBlieux 706
Low-Frequency Induction. Conwell, Warren 276
Lumber Indnstry, Electric Power in the. Onstad 92
Lumber Moisture Content Determined Electrically 787

M

Machine Constants, Synchronous (Abs.) ... 961
Machinery, Elastic Supports for Rotating. Hull, Stewart 347
Machinery, Electrical. (Com. rept.) 561
Machinery Noise, Measurement of. Marvin 349
Machines, Magnetic Noise in Synchronous. Graham, Beckwith, Milliken 344
Magnetic Circuit Units Adopted by I.E.C. Kennelly 133
Magnetic "Iron" Perfected by Research. Yensen 475
Magnetic Noise in Synchronous Machines. Graham, Beckwith, Milliken 344
Magnetic Systems, Field Transients in (Abs.). Weber 961
Man Benefited by Engineering Progress? Has. (See Engg. Foundation Symposium)
Marine Work, Application to. (Com. rept.) 509
Measurement, Average-Voltage Method for Transformer Loss. Boyajian 670
Measurement of Machinery Noise. Marvin 349
Measurement of Noise in Electrical Machinery. Bailey 340
Measurement of Stray-Load Losses, Calorimeter (Abs.). Floyd, Dunbar 756
Measurements, Instruments and. (Com. rept.) 587
Measurements, Noise. Steinberg 42
Measurements of Sound Absorption, Electrical (Abs.). Albert, Bullis 755
(Measurements) Vacuum-Tube Device for Current-Balance Telemeters. Lenehan, MacGahan 510
Measuring Machine Noise, Difficulties in. Bailey 340
Mercury Arc Rectifier Research. Hull, Brown 788
Mercury Rectifiers for Subway Service. VanGelder 97
Metal-Clad Synchronous Motors Latest Thing for Nitrate Plants 339
Meter for Noise Analysis, New. Castner, Dietze, Stanton, Tucker 342
Meters, Remote Reading of Watthour. Fitzgerald 942
Mica Sheets, Determining the Flexibility of 336
Mining Work, Application to. (Com. rept.) 598
Mitigation of Substation Noise. Bishop 351
Modern Electrified Dairy Plant. Dreux, Brunner 285
Modern Practices in Private-Wire Telegraph Service. Pierce 45
Moisture Content Determined Electrically, Lumber 787
Mokelumne Hydroelectric Project. Crellin. 705
Motive Power for Suburban Electric Lines. Kerr 438
Motor Design Factors, Correlation of Induction (Abs.). Hoover 754
Motor Frames, Resistance Welding Improves. Thomson 273
Motor, Simplex Synchronous. Hyde 514
Motors, Field Harmonics in Induction. Trickey 939
Motors for Heavy Rolling Mills, Twin. Wright, Stokes 506
Motors for Special Loads, Synchronous. McLenegan, Ferris 819
Motors, Irregularities in Speed-Torque Curves of Induction 936
Motors Latest Thing for Nitrate Plants, Metal-Clad Synchronous 339
Motors, Repulsion Starting for Capacitors. Bretch 630
Motors, Skewed Slots in Induction. Ball ... 941
Motors, Slot Combinations of Induction. Kron 937
Motors, Synchronizing Salient-Pole. Edgerton, Fourmarier 430
Moving Pictures, Stroboscopic. Edgerton .. 327
Mutual Impedance of Grounded Wires. (Abs.). Foster 660

N

Narratives, Research (See Engg. Foundation, Research Narratives)
(National Research Council)
Chemical Research in the Field of Dielectrics (Abs.). (1930) 28
Conductivity of Insulating Oils (Abs.) ... 26
Impregnated Paper Insulation (Abs.). Hamburger 27
Insulation Research Turns Again to Fundamentals. (1930) 24
Predetermination of Cable Deterioration (Abs.). Roper 28
Year's Efforts Show Commendable Progress. (1930). Whitehead 24
Trend in Dielectric Research. (1931). Whitehead 967
(Neon) Development of Gaseous Tube Lighting. Moore 648
Neon Tube Sign Lighting. Kober 650
Neon Tube Signs, Unity Power Factor for. McNeely, Law 886
Nerve Injuries From Electric Shock, Kouwenhoven, Langworthy 929
Network for Medium-Load Areas, Primary. Stanley, Sinclair 400
Network for Portland, Oregon, An A-C. Clark 644
Network System, Philadelphia A-C. Davis, Ross 958
Networks, Balancing Cables by Inductive. Pupin 933
Networks, Burn-Off Tests in Low Voltage. Sutherland, MacCorkle 662
Networks, Tie-Line Control of Interconnected (Abs.). Purcell, Powel 754
Networks, Vertical A-C. Distribution. Kehoe, Jones 292
Neutral Instability, Physical Nature of. Boyajian, McCarty 110
Neutralized Welding Generator. Creedy ... 412
Neutralized Welder—A Means of Controlling Transients. Creedy 412
Newfoundland-Azores High-Speed Duplex Cable. Milnor, Randall 337
New Interurban Cars Secure High Speed at Low Costs 932
New Meter for Noise Analysis. Castner, Dietze, Stanton, Tucker 342
New System for D-C. Arc Welding. Bergman 283
Niagara Hudson System, Communication in the. Bundy 805
Ninety Miles an Hour in a Trolley Car 49
Noise, a Factor in Machine Design and Operation 341
Noise Analysis, New Meter for. Castner, Dietze, Stanton, Tucker 342
Noise, Difficulties in Measuring Machine. Bailey 340
Noise-Frequency Induction. Wills, Blackwell 279
Noise From Induction Regulators. Foltz, Shirk 352
Noise in Synchronous Machines, Magnetic. Graham, Beckwith, Milliken 344
Noise, Measurement of Machinery. Marvin 349
Noise Measurements. Steinberg 42
Noise, Mitigation of Substation. Bishop ... 351
Noises From Power Transformers, Reducing. George 194
Non-Linear Circuits for Relay Applications. Suits 963

O

Ohio Falls Hydroelectric Station at Louisville, Ky. Stanley, Wood 128
Oil-Blast Circuit Breaker, The. Prince, Skeats 134
Oil by Electricity, Cracking. Rowland 288
Oil Circuit Breaker Tests—Phlo 1930, Aims, Set-up and Results from a System and Operating Viewpoint (Abs.). Sporn, St.Clair 745
Oil Field Operations, Electrical Equipment for (Abs.). Hill, SeLegue 753
Oil Filled Cable and Accessories. Atkinson, Simmons 880
Oils, Conductivity of Insulating (Abs.). (1930) 26
Oils, Conductivity of Insulating (Abs.). Whitehead 672
Oils, Some Electrical Characteristics of (Abs.). Race 673
Operating Experiences With Automatic and Supervisory Control 888
Operating Experience With Automatic Stations Part I—Columbia Engineering & Management Company. Stamper 889
Operating Experiences With Automatic Stations. Part II—Toronto Hydro-Electric System. Ambuhl 890
Operating Experiences With Reactance Type Relays. George 205
Operation, Control Groups Simplify. Stanley, Wood 128
Orient Turns to Automatic Telephones. Chow 747
Oscillations in Distributed Circuits, Transient. Bewley 962
Oscilograph Tests on Low-Current Arcs. Attwood, Dow, Krausnick 949
Overseas Radio Telephone Service. Cowan. 476
Overvoltage on Transmission Systems Caused by Dropping Load (Abs.). Burnham 900

P

Pacific Gas & Elec. Co., Mokelumne River Development of the. Crellin 705
Pacific Gas and Elec. Co., Power Transm. from the Mokelumne Hydro Devpt. of. 713
Paper, Fundamental Properties of Impregnated (Abs.). Whitehead, Kouwenhoven 674
Paper Insulation, Air and Moisture, vs. (Abs.). Whitehead, Hamburger 674
Paper Insulation, Impregnated (Abs.), (1930). Hamburger 27
Patent Appeal Court is Proposed, Single. Prindle 502
Percentage Differential Transformer Protection. Cordray 861
Philadelphia A-C. Network System, The. Davis, Ross 958
Physical Nature of Neutral Instability, The. Boyajian, McCarty 110
Pictures, Stroboscopic Moving. Edgerton .. 327
Pilot Wires, Relaying With Two. Frior 824
Pinchot, President Lee Answers Governor .. 215
Planning of Long Distance Telephone Facilities, Advance. McFarland 902
Plants, Distribution for Industrial (Abs.). McLain 881
Platinum, Konel—A Substitute for 650
Population for Engineering Purposes, Forecasting (Abs.). Holsen 902
Porcelain, Electrical. Kraner 200
Potential Transformers, Saturation Phenomena in. Weller 106
Power Application, General. (Com. rept.). 580
Power Development, Some Aspects of Federal Regulation of Water. Bonner. 35
Power Distribution From Mokelumne Plants. Wright, Dexter 713
Power Equipment at KDKA's New Station. Davis 865
Power for Industrial Plants, D-C. Abbiss, West 329
Power Generation. (Com. rept.) 602
Power in the Lumber Industry, Electric. Onstad 92
Power in the Steel Industry, Electric. Stoltz 410
Power in Urban Transportation, Electric. Gordon 4
Power in the Wood Products Industry, Electric (Abs.). Carey, Howe 753

Power Practises as They Affect Inductive Coordination, Telephone and. Harrison, Silver 176
Power Supply for Telegraph Service (Abs.). Griffith 743
Power Supply for Telephone Service. Young, Lunsford 423
Power System Voltages and Currents Under Fault Conditions. Evans, Wright 415
Power Transformer Noise, Its Characteristics and Reduction. George 194
Power Transmission and Distribution. (Com. rept.) 617
Power Transmission and Distribution From the Mokelumne River Devpt. of the Pacific Gas and Elec. Co. Wright, Dexter 713
Power? What of Surplus. Clark 197
Predetermination of Cable Deterioration (Abs.). (1930) 28
Present Practise in System Grounding. (Com. rept.) Powell 638
President Lee Answers Governor Pinchot 215
Primary Network for Medium-Load Areas, The. Stanley, Sinclair 400
Printing-Telegraph Circuits, A Concentrator for. Blanton 431
Private-Wire Telegraph Service. Pierce 45
Production and Application of Light. (Com. rept.) 594
Progress and Prosperity, The Way to. Grunsky 812
Progress? Has Man Benefited by Engineering. Mees 643
Progress in Fuel Utilization 113
Progress is the Way Out of Depression. Berresford 947
Progress—1731-1831-1931, Engineering. Insull 741
Propagation of Electric Waves. (Com. rept.) 652
Properties of Impregnated Paper, Fundamental (Abs.). Whitehead, Kouwenhoven 674
Prosperity, The Way to Progress and. Grunsky 812
Protection Against Lightning Surges 498
Protection for a "Close-Linked" System, Relay. LeClair 471
(Protection), Fundamental Basis for Distance Relaying. Lewis, Tippet 420
Protection, Percentage Differential Transformer. Cordray 361
Protective Devices. (Com. rept.) 624
Protective Relay System, Evolving a Modern. Stauffacher 268
Proximity Effect in Cable Sheaths. Dwight 965
Pulling Into Step of a Salient-Pole Synchronous Motor. Edgerton, Fourmarier 430

R

Radio Coordination (Abs.). Campbell, Kalb 756
(Radio) Harmonic Generation by Grid-Circuit Distortion (Abs.). Terman, Chambers, Fisher 966
(Radio) Power Equipment at KDKA's New Station. Davis 865
Radiotelephone Service is Expanding. Pilliod 748
Radiotelephone Service, Overseas. Cowan 476
(Railroads) Calculations for Inclined Catenary. Pickens 732
(Railroads) Catenary Construction for the Cleveland Terminal. Clement, Richards 734
(Railroads) Motive Power for Suburban Electric Lines. Kerr 438
Railroads *vs.* Transmission Lines. Woodruff, Wright 102
Rails, Detecting Hidden Fissures in. Drake 122
Railways for Urban Transportation, Automobiles *vs.* Gordon 4
Reactance of (Transmission) Lines With Ground Return, Clem 868
Reactance Relay Performance Reviewed. George 205
Reactor Improves D-C. Arc Welding, Transforming. Bergman 283
Recent Developments in the Operation of Radiotelephone Service. Cowan 476
Rectifier Transformers, Losses in Mercury. DeBitleux 706
Rectifiers, Backfires in Mercury. Slepian, Ludwig 793
Rectifiers for Subway Service, Mercury. VanGelder 97
Rectifiers, Solving the Mystery of Mercury Arc. Hull, Brown 788
Reducing Noises From Power Transformers. George 194
Regulation, Automatic Speed. Ashbaugh 363
Regulation of Water Power Development, Some Aspects of Federal. Bonner 35
Regulator, Vacuum-Tube Voltage. Verman, Richards 436
Regulators, Noise From Induction 352
Reignition of Metallic A-C. Arcs in Air. Attwood, Dow, Krausnick 949
Relay Applications, Non-Linear Circuits for. Suits 963
Relay Performance Reviewed, Reactance. George 205
Relay Protection for a "Close-Linked" System. LeClair 471
Relay System, Evolving a Modern Protective. Stauffacher 268
Relaying, Fundamental Basis for Distance. Lewis, Tippet 420
Relaying With Two Pilot Wires. Frier 824
Relays, Effect of Wave Form on Operation of Induction (Abs.). Robinson 900
(Relays) Percentage Differential Transformer Protection. Cordray 361
Relays to Operate in One-Sixtieth Second 29
Remote Reading of Watthour Meters. Fitzgerald 942
Reports, Technical Committee. (See Committee Reports, Technical)
Repulsion Starting for Capacitor Motors. Brotch 830
Research. (Com. rept.) 627
Research Advances Are Recorded, Insulation 672
(Research) Conductivity of Insulating Oils. (Abs.). (1930) 28
(Research) Impregnated Paper Insulation (Abs.). (1930). Hamburger 27
Research in the Field of Dielectrics, Chemical (Abs.). (1930) 28
Research, Magnetic "Iron" Perfected by. Yensen 475
Research Narratives (see Engineering Foundation)
(Research) Predetermination of Cable Deterioration (Abs.). (1930) 28
Research, Trend in Dielectric. (1931). Whitehead 967
Research Turns Again to Fundamentals, Insulation. (1930) 24
(Research) Year's Efforts Show Commendable Progress. (1930) 24
Residual Air and Moisture in Impregnated-Paper Insulation—III (Abs.). Whitehead, Hamburger 674
Resistance Welding Improves Motor Frames. Thomson 273
Riverbend Steam-Electric Generating Station 718
Rolling Mills, Twin Motors for Heavy. Wright, Stokes 506
Russia, The Transfer of Skill to. Polakov 883

S

San Francisco-Los Angeles Section of the Pacific Coast (Telephone) Cable Network. Calderwood, Smith 730
Saturation Phenomena in Potential Transformers. Weller 106
Science? Why Apply. Howe 861
Series Resistance to Increase Stability. Bergvall 730
Severe Lightning Tests Made on "Surge Proof" Transformers 823
Shallenberger Personal Memoranda Discovered 422
Shock, Nerve Injuries From Electric. Kouwenhoven, Langworthy 929
Shock? What are Effects of Electric. Kouwenhoven, Langworthy 406
Signals, Light Beams Operate Traffic. Hitchcock 182
Sign Lighting, Neon Tube. Kober 650
(Signs) Development of Gaseous Tube Lighting. Moore 648
Signs, Unity Power Factor for Neon Tube. McNeely, Law 888
Simplex Synchronous Motor. Hyde 314
Simplicity and Economy of Oil Filled Cable 874
Simultaneous Faults on Three-Phase Systems (Abs.). Clarke 970
Single Patent Appeal Court is Proposed. Prindle 502
Skewed Slots in Induction Motors. Ball 941
Skinner Takes the Helm, Doctor 633
Slip-Rings and Commutators, Helical Grooves in. Little 427
Slot Combinations of Induction Motors. Kron 937
Small Alternators Now Fully Automatic. Wetsel 23
Snow Surveys and Hydro Forecasting (Abs.). Boardman 756
Society of Industrial Engineers. (Polakov Address Before N. Y. Chapter.) 883
Solving the Mystery of Mercury Arc Rectifiers. Hull and Brown 788
Some Aspects of Federal Regulation of Water Power Development. Bonner 35
Some Effects of Unbalanced Faults. Evans, Wright 415
Some Electrical Characteristics of Cable Oils (Abs.). Race 673
Some Experiments with Arcs Between Metal Electrodes. Schrum, Wiest 827
Some Factors Affecting Stability. Merriam, Arnold 339
Sound Absorption, Electrical Measurements of (Abs.). Albert, Bullis 755
Sparkover Based on Lichtenberg Figures, Kindling of Electric (Abs.). Magnuson 756
Stability of Transmission Lines (Abs.). Smouroff 721
Stability, Series Resistance to Increase. Bergvall 730
Stability, Some Factors Affecting. Merriam, Arnold 339
(Stability) Overvoltage on Transmission Systems Caused by Dropping Load (Abs.). Burnham 900
Stabilization of Industry. Swope 816
Standards, A.I.E.E. (See News Index—Standards)
Stations, Automatic. (Com. rept.) 542
Status of Cooperative Work on Joint Use of Poles. Martin, Huber 202
Status of Joint Development and Research on Low-Frequency Induction. Conwell, Warren 276
Status of Joint Development and Research on Noise-Frequency Induction. Wills, Blackwell 279
Steam-Electric Generating Station, Riverbend 718
Steel, Electric Power in the Steel Industry. Stoltz 410
Steel Production, Application to Iron and. (Com. rept.) 590
Stock Exchange, Electric Communication and the New York. Worcester 355
Stray-Load Losses, Calorimeter Measurement of (Abs.). Floyd, Dunbar 756
Stroboscopic Moving Pictures. Edgerton 327
Studies in Non-Linear Circuits. Suits 963
Study of the Three-Circuit Transformer, A. (Abs.). Estwick 942
Submarine Cable Telegraphy; Influence of Interference. Milnor 281
Substation, Impulse Voltage Tests on a 4.8-Kv. Distribution (Abs.). Collins, Piepho, Torok 901
Substation Noise, Mitigation of. Bishop 351
Substations, Automatic Control of. Stamper 888
Substations, Automatic and Supervisory Control. Ambuhl 890
Substations, Impulse Tests Made on. Southgate, Brookes, Whitehead, Roman 354
Substations of the Broad Street Subway of Philadelphia. Van Gelder 97
Suburban Electric Lines, Motive Power for. Kerr 438

Suburban Service, Lackawanna Electrification Improves. Moreland ... 185
Subway Service, Mercury Rectifiers for. VanGelder ... 97
Sunlight—Natural and Artificial, Clinical. Downes ... 511
Sunshine for the Modern Office, Artificial ... 357
Supervisory Automatic Control of a Generating Station. Stanley ... 892
Supervisory Control of Substations, Automatic and. Ambuhl ... 890
Supervisory Control, Operating Experiences With Automatic and ... 888
Supports for Rotating Machinery, Elastic. Hull, Stewart ... 347
Suspension Insulator Lifts 20-Ton Load ... 671
Switzerland, Water Power Exploitation in. Dossenbach ... 677
Symmetrical Components, A Note On (Letter). de la Garza ... 910
Synchronizing Salient-Pole Motors. Edgerton, Fourmarier ... 430
Synchronizing With Vacuum Tubes ... 105
Synchronous Machine Constants (Abs.) ... 961
Synchronous Motor With Phase-Connected Damper Winding for High-Torque Loads. Hyde ... 814
Synchronous Motors for Special Loads. McLenegan, Ferris ... 819
System, Communication in a Metropolitan (power). Juhnke ... 809
System, Communication in the Niagara Hudson (power). Bundy ... 805
System Disturbances, Governor Performance During. Buell, Caughey, Hunter, Marquis ... 37
System, Evolving a Modern Protective Relay. Stauffacher ... 268
System Grounding, Present Practise in. Powell ... 638
System of the Union Elec. Lt. & Pwr. Co., Interconnection of the 25- and 60-cycle (Abs.). Nelson, Hough ... 901
System Operation, Communication Plays Its Part in Electric Power ... 802
System Operation, Lightning *as* ... 501
System Performance, Test Results and (oil circuit breakers). Sporn, St.Clair ... 745
System, Philadelphia A-C. Network. Davis, Ross ... 958
System, Relay Protection for a "Close-Linked." LeClair ... 471
Systems, Calculating Load Division in Distribution (Abs.). Almquist ... 900
Systems Caused by Dropping Load, Overvoltage on Transmission (Abs.). Burnham ... 900
Systems, Layout of Oil Filled Cable. Shanklin, Buller ... 878
Systems, Simultaneous Faults on Three-Phase (Abs.). Clarke ... 970

T

Tape-Armored Telephone Toll Cable (Abs.) Nystrom ... 902
Technical Committee Reports. (See Committee Reports, Technical.)
Telegraph Circuits, A Concentrator for Printing. Blanton ... 431
Telegraph Service, Power Supply for (Abs.). Griffith ... 742
Telegraph Service, Private-Wire. Pierce ... 45
Telegraph (Transmission) Testing Machine, A. Bramhall ... 668
Telegraphic Pilot-Wire Relay System. Frier ... 824
Telegraphy, Interference in Ocean Cable. Milnor ... 281
Telemeters, Vacuum-Tube Device for Current-Balance. Lenehan, MacGahan ... 510
Telephone and Power Practises as They Affect Inductive Coordination. Harrison, Silver ... 176
Telephone Facilities, Advance Planning of Long Distance (Abs.). McFarland ... 902
Telephone Service, Overseas Radio. Cowan ... 476
Telephone Service, Power Supply for. Young, Lunsford ... 423
Telephone Toll Cable Extended. Calderwood, Smith ... 736
Telephone Toll Cable, Tape-Armored (Abs.). Nystrom ... 902
Telephone Transmission, The Time Factor in (Abs.). Blackwell ... 902
Telephones, Orient Turns to Automatic. Chow ... 747
Temperatures in Electric Power Cables Under Variable Loading. Church ... 944
Tennessee Lightning Investigation Continues. Housley ... 30
Test Results and Circuit Breaker Behavior (Abs.). Spurck, Strang ... 746
Test Results and System Performance (oil circuit breakers). Sporn, St.Clair ... 745
Testing Machine, A Telegraph. Bramhall ... 668
Tests Made on Substations, Impulse. Southgate, Brookes, Whitehead, Roman ... 354
Tests Made on "Surge Proof" Transformers, Severe Lightning ... 823
Tests on a 4.8-Kv. Distribution Substation, Impulse Voltage (Abs.). Collins, Piepho, Torok ... 901
Tests on Circuit Breakers, Field ... 744
Tests on Thyrite Arresters, Field. McEachron, Wade ... 290
Tests With Artificial Lightning, Field ... 487
Tests With Natural Lightning ... 490
Theater Lighting, Color Console for ... 259
Theories of Lightning Discharge and Traveling Waves ... 481
Theory of Abnormal Voltages (transformer line-to-neutral). LaPierre ... 114
Thermal Breakdown of Solid Dielectrics (Abs.). Moon ... 676
Three-Circuit Transformer, The (Abs.) Estwick ... 942
Three-Phase Systems, Simultaneous Faults on (Abs.). Clarke ... 970
Three Years' Operating Experience with Miniature Switchboard Supervisory Automatic Control. Stanley ... 892
Thyrite Arresters, Field Test on. McEachron, Wade ... 290
Tie-Line Control of Interconnected Networks (Abs.). Purcell, Powel ... 754
Time Factor in Telephone Transmission, The (Abs.). Blackwell ... 902
Traffic Signals, Light Beams Operate. Hitchcock ... 182
Transfer of Skill to Russia, The. Polakov ... 883
Transformer, A Study of the Three-Circuit (Abs.). Estwick ... 942
Transformer Loss Measurement, Average-Voltage Method for. Boyajian ... 670
Transformer Protection, Percentage Differential. Cordray ... 361
Transformers, Desirable Accuracies in Instrument. Wentz ... 657
Transformers, Losses in Mercury Rectifier. DeBlieux ... 796
Transformers, Reducing Noises from Power. George ... 194
Transformers, Saturation Phenomena in Potential. Weller ... 106
Transformers, Severe Lightning Tests Made on "Surge Proof." ... 823
Transformers, Transient Voltages in Auto. Palueff ... 664
Transforming Reactor Improves D-C. Arc Welding. Bergman ... 283
Transient Oscillations in Distributed Circuits (Abs.). Bewley ... 962
Transient Voltages in Auto-Transformers. Palueff ... 664
Transients in Magnetic Systems, Field. (Abs.). Weber ... 961
Transmission and Distribution, Power. (Com. rept.) ... 617
(Transmission) Circle Diagrams for Short Lines. Owens ... 871
(Transmission) Corona and Line Surges. Skilling ... 798
(Transmission) Corona and Line Surges (Letter). Bewley ... 909
(Transmission) Corona *as* Conductor Surface. Weidlein ... 898
(Transmission) Field Studies of Arcing Faults on Power Lines. Eaton, Peck, Dunham ... 857
Transmission Line Flashovers, Fog-Type Insulators Eliminate ... 101
Transmission Lines, Lightning Disturbances on (Abs.). Jackson, Warner ... 908
Transmission Lines, Railroads *as*. Woodruff, Wright ... 102
Transmission Lines, Stability of (Abs.) Smouroff ... 721
(Transmission) Power Distribution from Mokelumne Plants. Wright, Dexter ... 713
(Transmission) Reactance of Lines With Ground Return. Clem ... 868
Transmission Systems Caused by Dropping Load, Overvoltage on (Abs.). Burnham ... 900
Transmission, The Time Factor in Telephone (Abs.). Blackwell ... 902
Transmission? Will Tuned Power Lines Eventually Solve Long Distance. Skilling ... 634
Transportation. (Com. rept.) ... 620
Transportation, Automobiles *vs.* Railways for Urban. Gordon ... 4
Traveling Waves on Transmission Systems. Bewley ... 478–502
Trend in Development of Modern Circuit Interrupters. MacNeill ... 260
Trend in Dielectric Research. (1931). Whitehead ... 967
Trends in Telephone and Power Practise as Affecting Coordination. Harrison, Silver ... 176
Trolley, Car, Ninety Miles an Hour in a ... 40
Tubes for Industrial Control, Electron (Abs.). King ... 831
Tuned Power Lines Eventually Solve Long Distance Transmission? Will. Skilling ... 634
Twin Motors for Heavy Rolling Mills. Wright and Stokes ... 506

U

Underlying Consideration of the (utility communication) Problem Outlined. Conwell, Keenan, Craig, Briggs ... 802
Union Elec. Lt. & Pwr. Co., Interconnection of the 25- and 60-Cycle System of the. (Abs.). Nelson, Hough ... 901
Units Adopted by I.E.C., Magnetic Circuit. Kennelly ... 133
Unity Power Factor for Neon Tube Signs. McNeely, Law ... 886
Utilization of Railroad Rights-of-Way for Elec. Pwr. Trans. and Coordination with R.R. Electrification. Woodruff, Wright ... 102

V

Vacuum Tubes and Their Applications. White ... 404
Vacuum-Tube Device for Current-Balance Telemeters. Lenehan, MacGahan ... 510
Vacuum Tubes Lead the Way ... 34
Vacuum-Tube Voltage Regulator. Verman, Richards ... 436
Vacuum Tubes, Synchronizing with ... 105
Various Factors Aid Extinction of Arcs. Browne ... 952
Vertical A-C. Distribution Networks. Kehoe, Jones ... 292
Voice Training on a Scientific Basis. Stanley. (See also Letters to the Editor, News Index) ... 752
Voltage Regulator, Vacuum-Tube. Verman, Richards ... 436
Voltages, Theory of Abnormal. LaPierre ... 114

W

Waldorf-Astoria, Communication in the New ... 895
Water Power Exploitation in Switzerland. Dossenbach ... 677
Wave Form on Operation of Induction Relays, Effect of. (Abs.). Robinson ... 900
Waves, Propagation of Electric. (Com. rept.) ... 652
Waves, Theories of Lightning Discharge and Traveling ... 481
Way to Progress and Prosperity, The. Grunsky ... 812
Welding Advances in Modern Building Construction, Electric ... 133
Welding, Automatic Arc. Koch ... 358
Welding, Electric. (Com. rept.) ... 537
Welding Generator, A Neutralized. Creedy ... 413

Welding Generator, Improved. Blankenbuehler 666
Welding Improves Motor Frames. Resistance. Thomson 273
Welding in Building Construction, Arc. Vinther 785
Welding, Transforming Reactor Improves D-C. Arc. Bergman 283
What are Effects of Electric Shock? Kouwenhoven and Langworthy 406
What of Surplus Power? Clark 197
What of the Foreign Job? Thomas 21
Why Apply Science? Howe 861
Will Tuned Power Lines Eventually Solve Long Distance Transmission? Skilling 634
Wood Products Industry, Electric Power in the (Abs.). Carey, Howe 753

Y

Year's Efforts Show Commendable Progress (1930). Whitehead 24
Your Nimble Servant—the Electron. Compton 192

Division II—Author Index

Abbiss, R.D.; West. D-C. Power for Industrial Plants 329
Albert, A.L.; Bullis. Electrical Measurements of Sound Absorption (Abs.) 755
Almquist, C.T. Calculating Load Division in Distribution Systems. (Abs.) 900
Ambuhl, F.F. Automatic and Supervisory Control of Substations 890
Arnold, H.R.; Merriam. Some Factors Affecting Stability 332
Ashbaugh, J.H. Automatic Speed Regulation 363
Atkinson, R.W.; Simmons. Accessories for Oil Filled Cable 880
Atwood, S.S.; Dow, Krausnick. Oscillograph Tests on Low-Current Arcs 949

B

Bailey, B.F. Difficulties in Measuring Machine Noise 340
Baker, R.M. Current Collection in Hydrogen Atmosphere 266
Ball, R.D. Skewed Slotatn Induction Motors 941
Beckwith, S.; Graham, Milliken. Magnetic Noise in Synchronous Machines 344
Bell, Edgar; Price. Lightning Investigation on the 220-Kv. System of the Penn. Pwr. & Lt. Co. (1930) 478–502
Bergman, S.R. Transformer Reactor Improves D-C. Arc Welding 283
Bergvall, R.C. Series Resistance to Increase Stability 730
Berresford, A.W. Progress is the Way Out of Depression 947
Bewley, L.V. Traveling Waves on Transmission Systems 478–502
Transient Oscillations in Distributed Circuits 962
Corona and Line Surges. (Letter) 909
Blackwell, O.B. The Time Factor in Telephone Transmission (Abs.) 902
Blackwell, O.B.; Wills. Noise-Frequency Induction 279
Blankenbuehler, J.H. An Improved Welding Generator 666
Blanton, Wm. B. A Concentrator for Printing-Telegraph Circuits 431
Bishop, E. A. Mitigation of Substation Noise 351
Boardman, H.P. Snow Surveys and Hydro-Forecasting (Abs.) 756
Bonner, Frank E. Federal Regulation of Water Power Development 35
Booker, C.A.; Clark. Joint Study Improves Communication Facilities 807
Boyajian, Aram. Average-Voltage Method for Transformer-Loss Measurement 670
Boyajian, Aram; McCarty. Physical Nature of Neutral Instability 110
Bramhall, F.B. A Telegraph Testing Machine 668
Bretch, Edward. Repulsion Starting for Capacitor Motors 830
Briggs, E.C.; Conwell, Keenan, Craig. Underlying Considerations of the Problem Outlined 802
Brookes, A.S.; Southgate, Whitehead, Roman. Impulse Tests Made on Substations 354
Brown, H.D.; Hull. Solving the Mystery of Mercury Arc Rectifiers 788
Browne, T.E., Jr. Various Factors Aid Extinction of Arcs 952
Brune, Otto; Eaton. Experimental Studies in the Propagation of Lightning Surges on Transmission Lines 478–502
Brunner, H.C.; Dreux. Electricity in Modern Dairy Plants 285
Buell, R.C.; Caughey, Hunter, Marquis. Governor Performance During System Disturbances 37
Buller, F.H.; Shanklin. Layout of Oil Filled Cable Systems 878
Bullis, W.R.; Albert. Electrical Measurements of Sound-Absorption (Abs.) 755
Bundy, E.S. Communication in the Niagara Hudson System 805
Button, C.T. (Letter) Concerning Voice Training 840
Burnham, E. J. Overvoltage on Transmission Systems Caused by Dropping Load. (Abs.) 900

C

Calderwood, E.M.; Smith. Telephone Toll Cable Extended 736
Campbell, C.C.; Kalb. Radio Coordination (Abs.) 756
Carey, C.E.; Howe. Electric Power in the Wood-Products Industry (Abs.) 753
Cartland, F.W. Lighting Airway Beacons .. 31
Castner, T. G.; Dietze, Stanton, Tucker. A New Meter for Noise Analysis 342
Caughey, R.J.; Buell, Hunter, Marquis. Governor Performance During System Disturbances 37
Chambers, D.E.; Fisher, Terman. Harmonic Generation by Grid Circuit Distortion (Abs.) 966
Chow, Y.K. The Orient Turns to Automatic Telephones 747
Church, E.A. Cable Temperatures at Variable Loading 944
Clark, Farley G. What of Surplus Power? .. 197
Clark, M.E.; Booker. Joint Study Improves Communication Facilities 807
Clark, S.B. An A-C. Network for Portland, Oregon 644
Clarke, E. Simultaneous Faults on Three-Phase Systems (Abs.) 970
Clem, J.E. Reactance of Lines With Ground Return 868
Clement, N.F.; Richards. Catenary Construction for the Cleveland Terminal .. 734
Collins, H.W.; Piepho, Torok. Impulse Voltage Tests on a 4.8-Kv. Distribution Substation. (Abs.) 901
Compton, Karl Taylor. Your Nimble Servant—the Electron 192
Conwell, R.N.; Fortescue, Lightning Discharges and Line Protective Measures 478–502
Conwell, R.N.; Keenan, Craig, Briggs. Underlying Considerations of the Problem Outlined 802
Conwell, R.N.; Warren. Low-Frequency Induction 276
Cordray, R.E. Percentage-Differential Transformer Protection 361
Cowan, F.A. Overseas Radio Telephone Service 476
Cox, J.H.; Gross. Lightning Investigation on the Appalachian Elec. Pwr. Co's. Transmission System 478–502
Craig, C.F.; Conwell, Keenan, Briggs. Underlying Considerations of the Problem Outlined 802
Creedy, Frederick. A Neutralized Welding Generator 413
Crellin, E.A. The Mokelumne Hydroelectric Project 705

D

Davis, H.S.; Ross, W.R. The Philadelphia A-C. Network System 958
Davis, R.L. Power Equipment at KDKA's New Station 865
Dawes, C.L.; Goodhue. Equivalent Circuits of Imperfect Condensers (Abs.) .. 676
DeBlieux, E.V. Losses in Mercury Rectifier Transformers 796
Denault, C.L.; Slepian. The Expulsion Fuse. (Abs.) 903
Dexter, B.D.; Wright. Power Distribution From Mokelumne Plants 713
Dietze, E.; Castner, Stanton, Tucker. A New Meter for Noise Analysis 342
Dossenbach, F. Water Power Exploitation in Switzerland 677
Dow, W.G.; Krausnick, Attwood. Oscillograph Tests on Low-Current Arcs 949
Dowell, J.C. Attenuation and Successive Reflections of Traveling Waves 478–502
Downes, A.C. Clinical Sunlight—Natural and Artificial 511
Drake, H.C. Detecting Hidden Fissures in Rails 122
Dreher, Carl. (Letter) Has Man Benefited by Engineering Progress? 766
Dreux, A.J.; Brunner. Electricity in Modern Dairy Plants 285
Dunbar, J.R.; Floyd. Calorimeter Measurement of Stray-Load Losses. (Abs.) 756
Dunham, J.M.; Eaton, Peck. Field Studies of Arcing Faults on Power Lines 857
Dwight, H.B. Proximity Effect in Cable Sheaths 965

E

Eaton, J.R.; Brune. Experimental Studies in the Propagation of Lightning Surges on Transmission Lines 478–502
Eaton, J.R.; Peck, Dunham. Field Studies of Arcing Faults on Power Lines 857
Edgerton, H.E. Stroboscopic Moving Pictures 327
Edgerton, H.E.; Fourmarier. Synchronising Salient-Pole Motors 430
Estwick, C.F. A Study of the Three-Circuit Transformer (Abs.) 942
Evans, R.D.; Wright. Some Effects of Unbalanced Faults 415

F

Ferris, A.G.; McLenegan. Synchronous Motors for Special Loads 819
Fisher, E.H.; Terman, Chambers. Harmonic Generation by Grid Circuit Distortion (Abs.) 966
Fitzgerald, A.S. Remote Reading of Watt-hour Meters 942
Floyd, G.D.; Dunbar. Calorimeter Measurement of Stray-Load Losses. (Abs.) 756
Foltz, J.P.; Shirk. Noise From Induction Regulators 352
Fortescue, C.L.; Conwell. Lightning Discharges and Line Protective Measures 478–502
Foster, R.M. Mutual Impedance of Grounded Wires (Abs.) 900
Fourmarier, Paul; Edgerton. Synchronising Salient-Pole Motors 430
Foust, C.M.; Lewis. Lightning Investigation on Transmission Lines—II 478–502
Frier, C.H. Relaying With Two Pilot Wires 824

G

de la Garza, E. (Letter) A Note on Symmetrical Components 910
George, E.E. Reactance Relay Performance Reviewed 205
George, R.B. Reducing Noises From Power Transformers 194
Goodhue, W.M.; Dawes. Equivalent Circuits of Imperfect Condensers (Abs.) .. 676
Gordon, Charles. Automobiles vs. Railways for Urban Transportation 4
Graham, Quentin; Beckwith, Milliken. Magnetic Noise in Synchronous Machines 344
Green, C.F. Airplane Flight Aided by Electricity 854

Griffith, E.W. Power Supply for Telegraph Service (Abs.) 742
Gross, I.W.; Cox. Lightning Investigation on the Appalachian Elec. Pwr. Co.'s Transmission System 478–502
Grunsky, C.E. The Way to Progress and Prosperity 812

H

Hamburger, F., Jr. Impregnated Paper Insulation (Abs.) 27
Hamburger, F.,Jr.; Whitehead. Air and Moisture vs. Paper Insulation (Abs.) .. 674
Hanker, F.C. Present Practise in System Grounding (Com. rept.) 638
Harrison, W.H.; Silver. Telephone and Power Practices as They Affect Induction Coordination 176
Helwig, W.F. Graphical Construction of Hyperbolic Functions 117
Hill, H.C.; SeLegue. Electrical Equipment for Oil-Field Operations (Abs.) .. 753
Hitchcock, R.C. Light Beams Operate Traffic Signals 182
Holmes, M.C. Insulation Variability (Abs.) 675
Holsen, J.N. Forecasting Population for Engineering Purposes (Abs.) 902
Hoover, Valno. Correlation of Induction-Motor Design Factors (Abs.) 754
Hough, E.L.; Nelson. Interconnection of the 25- and 60-Cycle System of the Union Electric Light & Power Co. (Abs.) 901
Housley, J.E. Tennessee Lightning Investigation Continues 30
Howe, H.E. Why Apply Science? 861
Howe, K.L.; Carey. Electric Power in the Wood-Products Industry (Abs.) 753
Huber, H.L.; Martin. Cooperative Work on Joint Pole Use 203
Hull, Albert W.; Brown. Solving the Mystery of Mercury Arc Rectifiers 788
Hull, E.H.; Stewart. Elastic Supports for Rotating Machinery 347
Hunter, E.M.; Buell, Caughey, Marquis. Governor Performance During System Disturbances 37
Hutchinson, F.L. "Electrical Engineering" 3
Hyde, M.A., Jr. The Simplex Synchronous Motors 814

I

Insull, Martin J. Engineering Progress—1731-1831-1931 741

J

Jackson, D.C., Jr.; Warner. Lightning Disturbances on Transmission Lines (Abs.) 903
Jansky, C.M. (Letter) Has Man Benefited by Engineering Progress? 766
Jessop, George A.; Powell. Greater Efficiency for Low-Head Hydro 118
Johnson, J.Allen. The Engineer in Civic Affairs 727
Johnson, W.O. Jr. (Letter) Has Man Benefited by Engineering Progress? 766
Jones, Bassett; Kehoe. Vertical A-C. Distribution Networks 292
Juhnke, P.B. Communication in a Metropolitan System 809

K

Kalb, H.N.; Campbell. Radio Coordination. (Abs.) 750
Keenan, G.M.; Conwell, Craig, Briggs. Underlying Considerations of the Problem Outlined 802
Kehoe, A.H.; Jones. Vertical A-C. Distribution Networks 292
Kennelly, A.E. Magnetic Circuit Units Adopted by I.E.C. 133
Kerr, Charles, Jr., Motive Power for Suburban Electric Lines 438
Kerr, S.Logan. Automatic Operator Improves Efficiency 14
Kilgore, L.A. Synchronous Machine Constants 961
King, W.R. Electron Tubes for Industrial Control (Abs.) 831
Kober, P.A. Neon Tube Sign Lighting 650
Koch, G.H. Automatic Arc Welding 358
Kouwenhoven, W.B.; Langworthy. What Are Effects of Electric Shock 406
Nerve Injuries From Electric Shock 929
Kouwenhoven, W.B.; Whitehead. Fundamental Properties of Impregnated Paper (Abs.) 674
Kraner, H.M. Electrical Porcelain 209
Krausnick, W.; Attwood, Dow. Oscillograph Tests on Low-Current Arcs 949

L

Langworthy, O.R.; Kouwenhoven. What Are Effects of Electric Shock 406
Nerve Injuries From Electric Shock 929
LaPierre, C.W. Theory of Abnormal Voltages 114
Law, R.R.; McNeely. Unity Power Factor for Neon Tube Signs 886
LeClair, T.G. Relay Protection for a "Close-Linked" System 471
Lee, W.S. "Electrical Engineering" 3
The Engineer's Duty to Himself and to the Public 125
President Lee Answers Governor Pinchot 215
Coordination—The Essence of Modern Engineering 512
Lee, W.S.; Wright, Tally, Porter, Stuart. Engineering and Human Happiness 641
Lenehan, B.E.; MacGahan. A Vacuum-Tube Device for Current-Balance Telemeters 510
Lewis, W.A.; Tippet. Fundamental Basis for Distance Relaying 420
Lewis, W.W.; Foust. Lightning Investigation on Transmission Lines—II 478–502
Lincoln, Paul M. Australasia as Seen by an Engineer 12
Little, G.M. Helical Grooves in Slip-Rings and Commutators 427
Lobo, G. (Letter) Has Man Benefited by Engineering Progress? 840
Lloyd, W.L., Jr.; Sporn. 1930 Lightning Investigations on the Transmission System of the Am. Gas and Elec. Co 478–502
Lowry, E.F. Konel—A Substitute for Platinum 659
Ludwig, L.R.; Slepian. Backfires in Mercury Rectifiers 793
Lumsford, R.L.; Young. Power Supply for Telephone Service 423

M

MacCorkle, D.S.; Sutherland. Burn-Off Tests in Low-Voltage Networks 662
MacGahan, Paul; Lenehan. A Vacuum-Tube Device for Current-Balance Telemeters 510
MacNeill, J.B. Development Trends in Circuit Interrupters 260
Mackeown, S.S. Cathode Drop in Arcs and Glow Discharges (Abs.) 755
Magnusson, C.E. The Kindling of Electric Sparkover Based on Lichtenberg Figures (Abs.) 756
Marquis, V.M.; Buell, Caughey, Hunter. Governor Performance During System Disturbances 37
Martin, J.C.; Huber. Cooperative Work on Joint Pole Use 203
Martin, Samuel, Jr. Brazed Joints for Electric Conductors 434
Marvin, H.B. Measurement of Machinery Noise 349
McCarty, O.P.; Boyajian. Physical Nature of Neutral Instability 110
McClain, W.J. Distribution Systems for Industrial Plants (Abs.) 831
McEachron, K.B.; Wade. Field Test on Thyrite Arresters 200
McFarland, C.O. Advance Planning of Long Distance Telephone Facilities (Abs.) 902
McLenegan, D.W.; Ferriss. Synchronous Motors for Special Loads 819
McNeely, J. K.; Law. Unity Power Factor for Neon Signs 886
Mees, C.E. Kenneth. Has Man Benefited by Engineering Progress? 642
Merriam, W.A.; Arnold. Some Factors Affecting Stability 332
Millikan, F.H.; Graham, Beckwith. Magnetic Noise in Synchronous Machines .. 344
Milnor, J.W. Interference in Ocean Cable Telegraphy 281
Milnor, J.W.; Randall. A High-Speed Submarine Cable 337
Moon, P.H. Thermal Breakdown of Solid Dielectrics (Abs.) 676
Moore, D.F. Development of Gaseous Tube Lighting 648
Moreland, Edward L. Lackawanna Electrification Improves Suburban Service ... 185

N

Nelson, L.V.; Hough. Interconnection of the 25- and 60-Cycle System of the Union Electric Light & Power Co. (Abs.) 901
Newton, E.G. Fuse Cut-Outs—Their Design and Application for A-C. Distribution Circuits (Abs.) 903
Nystrom, C.W. Tape-Armored Telephone Toll Cable (Abs.) 902

O

Onstad, A.H. Effective Power in the Lumber Industry 92
Owens, T.D. Circle Diagrams for Short Lines 871

P

Palueff, K.K. Transient Voltages in Auto-Transformers 664
Peck, J.K.; Dunham, Eaton. Field Studies of Arcing Faults on Power Lines 857
Peek, F.W., Jr. Lightning Characteristics—Induced Voltages—Direct Strokes—Coordination—Transmission Line Design 478–502
Pickens, B.M. Calculations for Inclined Catenary 732
Piepho, E.E.; Torok, Collins. Impulse Voltage Tests on a 4.8-Kv. Distribution Substation (Abs.) 901
Pilliod, J.J. Radiotelephone Service in Expanding 748
Pittman, R.R.; Torok. Lightning Investigation on a Wood Pole Transmission Line 478–502
Polakov, Walter N. The Transfer of Skill to Russia 883
Porter, H. Hobart; Lee, Wright, Tally, Stuart. Engineering and Human Happiness 641
Powell, C.A.; Purcell. Tie-Line Control of Interconnected Networks (Abs.) 754
Powell, C.A. Present Practise in System Grounding. (Com. rept.) 638
Powell, C.A.; Jessop. Greater Efficiency for Low-Head Hydro 118
Price, A.L.; Bell. Lightning Investigation on the 220-Kv. System of the Penn. Pwr. & Lt. Co. (1930) 478–502
Prince, D.C.; Skeats. The Oil-Blast Circuit Breaker 134
Prindle, Edwin J. Single Patent Appeal Court is Proposed 502
Pupin, M.I. Balancing Cables by Inductive Networks 933
Purcell, T.E.; Powell. Tie-Line Control of Interconnected Networks (Abs.) 754

R

Race, Hubert H. Some Electrical Characteristics of Cable Oils (Abs.) 673
Randall, G.A.; Milnor. A High-Speed Submarine Cable 337
Richards, E.E.; Clement. Catenary Construction for the Cleveland Terminal .. 734
Richards, L.A.; Verman. A Vacuum-Tube Voltage Regulator 436
Robertson, A.W. Industry's New Responsibilities 719
Robinson, P.H. Effect of Wave Form on Operation of Induction Relays (Abs.) .. 900
Rogers, E.H. Electricity in the Cement Industry 18

Roman, W.G.; Southgate, Brookes, Whitehead. Impulse Tests Made on Substations 354
Roper, D.W. Economics of High Voltage Cable 874
Ross, M.D. Hydrogen Cooling for Turbine-Generators 211
Ross, W.R.; Davis. The Philadelphia A-C. Network System 958
Rowland, Herbert R. Cracking Oil by Electricity 288

S

Sanford, F.E. Application of Primary Distribution Fuses (Abs.) 903
Schrum, G.M.; Wiest, Jr. Experiments With Short Arcs 827
SeLegue, J.B.; Hill. Electrical Equipment for Oil-Field Operations (Abs.) 753
Shanklin, G.B.; Buller. Layout of Oil Filled Cable Systems 878
Shirk, W. F.; Foltz. Noise From Induction Regulators 352
Shively, E.K.; Whitlow. Automatic Control for Variable Ratio Frequency Converters (Abs.) 901
Silver, A.E.; Harrison. Telephone and Power Practices as They Affect Inductive Coordination 176
Simmons, D.M.; Atkinson. Accessories for Oil Filled Cable 880
Sinclair, C.T.; Stanley. The Primary Network for Medium-Load Areas 400
Skeats, W.F.; Prince. The Oil-Blast Circuit Breaker 134
Skilling, H.H. Will Tuned Power Lines Eventually Solve Long Distance Transmission? 634
Corona and Line Surges 798
Electric Analogs for Difficult Problems 862
Skinkle, W.B. Interchange of Industrial Power for Better Operating Efficiency 365
Skinner, C.E. Doctor Skinner Takes the Helm 633
Slepian, J.; Denault. The Expulsion Fuse (Abs.) 903
Slepian, J.; Ludwig. Backfires in Mercury Rectifiers 793
Slepian, J.; Strom. Insulation Material Aids Extinction of Cable Arcs 955
Smith, D.F., Calderwood. Telephone Toll Cable Extended 736
Smouroff, Alexander. Stability of Transmission Lines (Abs.) 721
Soderberg, C.R. The Calculation of Generator Heat Losses (Abs.) 429
Southgate, R.N.; Brookes, Whitehead, Roman. Impulse Tests Made on Substations 354
Sporn, Philip. 1929 Lightning Experience on the 132-Kv. Transmission Lines of the Am. Gas and Elec. Co. 478–502
Sporn, Philip; Lloyd. 1930 Lightning Investigations on the Transmission System of the Am. Gas and Elec. Co. 478–502
Sporn, Philip; St. Clair. (Circuit Breaker) Test Results and System Performance (Abs.) 745
Sprague, F.J. (Letter) Mr. Edison's Greatest Work 978
Spurck, R.M.; Strang. Test Results and Circuit Breaker Behavior (Abs.) 746
Stahl, E.C.M. Economic Loading of Generating Stations 722
Stamper, Garland. Operating Experiences With Automatic and Supervisory Control 888
Stanley, Douglas. Voice Training on a Scientific Basis 752
Stanley, R.M. Supervisory Automatic Control of a Generating Station 892
Stanley, R.M.; Sinclair. The Primary Network for Medium-Load Areas 400
Stanley, R.M.; Wood. Control Groups Simplify Operation 128
Stanton, G.T.; Castner, Dietze, Tucker. A New Meter for Noise Analysis 342
Stauffacher, E.R. Evolving a Modern Protective Relay System 368
St. Clair, H.P.; Sporn. (Circuit Breaker) Test Results and System Performance (Abs.) 745
Steinberg, John C. Noise Measurements 42
Stewart, E.C. Carrier Communication Economical for Long Distances 810
Stewart, W.C.; Hull. Elastic Supports for Rotating Machinery 347
Stokes, H.E.; Wright. Twin Motors for Heavy Rolling Mills 506
Stoltz, G.E. Electric Power in the Steel Industry 410
Strang, H.E.; Spurck. Test Results and Circuit Breaker Behavior (Abs.) 746
Strom, A.P.; Slepian. Insulation Material Aids Extinction of Cable Arcs 955
Stuart, Francis Lee; Lee, Wright, Tally, Porter. Engineering and Human Happiness 641
Suits, C.G. Non-Linear Circuits for Relay Applications 963
Sutherland, Geo.; MacCorkle. Burn-Off Tests in Low-Voltage Networks 662
Swope, Gerard. Stabilization of Industry 816

T

Tally, Robert E.; Lee, Wright, Porter, Stuart. Engineering and Human Happiness 641
Terman, F.E. Chambers, Fisher. Harmonic Generation by Grid Circuit Distortion (Abs.) 966
Thomas, Percy H. What of the Foreign Job? 21
Thomson, Malcolm. Resistance Welding Improves Motor Frames 273
Tippett, L.S.; Lewis. Fundamental Basis for Distance Relaying 420
Torok, J.J. An Experimental Lightning Protector for Insulators 478–502
Torok, J.J.; Pittman. Lightning Investigation on a Wood Pole Transmission Line 478–502
Torok, J.J.; Collins, Piepho. Impulse Voltage Tests on a 4.8-Kv. Distribution Substation (Abs.) 901
Trickey, P.H. Field Harmonics in Induction Motors 939
Tucker, R.S.; Castner, Dietze, Stanton. A New Meter for Noise Analysis 342

V

VanGeldor, H.M. Mercury Rectifiers for Subway Service 97
Verman, L.C.; Richards. A Vacuum-Tube Voltage Regulator 436
Vinther, P.N. Arc Welding in Building Construction 785
Vogel, Orrin S. (Letter) Has Man Benefited by Engineering Progress? 766

W

Wade, E.J.; McEachron. Field Tests on Thyrite Arresters 290
Warner, R.W.; Jackson. Lightning Disturbances on Transmission Lines (Abs.) 903
Warren, H.S.; Conwell. Low-Frequency Induction 276
Weber, Ernst. Field Transients in Magnetic Systems (Abs.) 961
Weidlein, W.D. Corona vs. Conductor Surface 898
Weller, C.T. Saturation Phenomena in Potential Transformers 106
Has Man Benefited by Engineering Progress? (Letter) 910
Wents, E.C. Desirable Accuracies in Instrument Transformers 657
West, D.C.; Abbiss. D-C. Power for Industrial Plants 329
Wetzel, Earle R. Small Alternators Now Fully Automatic 23
White, W.O. Electrolysis Survey at Louisville, Ky. 100
Vacuum Tubes and Their Applications 404
Whitehead, E.R.; Southgate, Brookes, Roman. Impulse Tests Made on Substations 354
Whitehead, John B. Year's (Insulation) Efforts Show Commendable Progress 24
The Conductivity of Insulating Oils (Abs.) 672
The Trend in Dielectric Research 967
Whitehead, J.B.; Hamburger, Air and Moisture vs. Paper Insulation (Abs.) 674
Whitehead, J.B.; Kouwenhoven. Fundamental Properties of Impregnated Paper (Abs.) 674
Whitlow, G.S.; Shively. Automatic Control for Variable Ratio Frequency Converters (Abs.) 901
Wiest, Jr., H.G.; Schrum. Experiments With Short Arcs 827
Wills, H.L.; Blackwell. The Time Factor in Telephone Transmission 270
Wood, E.D.; Stanley. Control Groups Simplify Operation 128
Woodruff, W.W.; Wright. Railroads vs. Transmission Lines 102
Worcester, Dean K. Electric Communication and the New York Stock Exchange 255
Wright, E.M.; Dexter. Power Distribution From Mokelumne Plants 713
Wright, G.I.; Woodruff. Railroads vs. Transmission Lines 102
Wright, R.H.; Stokes. Twin Motors for Heavy Rolling Mills 506
Wright, Roy V.; Lee, Tally, Porter, Stuart. Engineering and Human Happiness 641
Wright, S.H.; Synchronous Machine Constants (Abs.) 961
Wright, S.H.; Evans. Some Effects of Unbalanced Faults 415

Y

Yensen, T.D. Magnetic "Iron" Perfected by Research 475
Young, R.L.; Lunsford. Power Supply for Telephone Service 423

Division III(a)—News
A.I.E.E. Activities

Addresses Wanted . . 64, 151, 233, 308, 380, 453, 523, 692, 765, 844, 920, 993
Annual Meeting, Notice of 360
Asheville Convention (See Meetings, National)
At Asheville—in 1905 760

B

Biographical Sketches. (See Biographical Index)
Branch meetings. (See Meetings, Branch)
Branch officers and counselors. (See Officers)

C

Can You Supply These Transactions? 376
Candidates, Nominating Committee Announces Official, for 1931 53
Candidates, rules governing nomination of . 837
Committee, Institute Policy, Appointed 522
Committee Reports Further Progress, Welded Rail 839
Committee Reports, Technical (See Tech. Subj. Index)
Conrad Awarded Edison Medal 60, 216
Conventions, District (See Meetings, District)
Convention, Pacific Coast '31. (See Meetings, National)
Convention, summer '31. (See Meetings, National)
Convention, winter '31 and '32. (See Meetings, National)
Counselors, and Student Branch officers. (See Officers)

D

Discussions. (See Meetings)
Directors' Meetings (See Meetings, Directors')
District Meetings. (See Meetings, District)

E

Edison Medal Presented to Dr. Conrad..60, 216
Edison, Thomas Alva
Bust for Deutsches Museum.....59, 446
As seen by Some Institute Leaders. (Letters).....906
Biography—obituary.....904
In Memory. (A.I.E.E. board dir.).....907
Employment Notes..77, 162, 239, 316, 387, 459, 531, 693, 767, 846, 918, 989

F

Faraday Discoveries Celebrated at Lehigh University.....527

G

Golf Trophy, Mershon Cup winners.....761

H

Hamilton, Treasurer, Resigns; W.I. Slichter Elected.....58

I

Institute Policy Committee Appointed.....523
Institute Prize Awards Announced for 1930 Papers.....448

K

Kansas City (No. 7) District meeting. (See Meetings, District)

L

Lake Tahoe (Pacific Coast convention). See Meetings, National)
Lamme Medal. (See Medals, Lamme)
Local Meetings (See Meetings, Branch, or Section)
Local Section officers. (See Officers)
Louisville (No. 4) District meeting. (See Meetings, District)

M

Medal, Edison, Awarded to Dr. Conrad..60, 216
Medals, Lamme.
Awarded to C.A.Fieldner. (Ohio State Univ.).....686
Nominations (1931) Close Oct. 1.....446, 685
Photos and outline of three awards.....519

MEETINGS, BRANCH:

Akron, Univ. of.....72, 154, 235, 311, 985
Alabama Poly. Inst..154, 236, 311, 384, 456, 985
Alabama, Univ. of.....154, 311, 384, 456, 985
Arizona, Univ. of.....154, 456, 528
Arkansas, Univ. of..72, 154, 236, 312, 384, 456, 528, 916
Armour Inst. of Tech..72, 154, 236, 312, 384, 456, 528, 985
British Columbia, Univ. of 73, 236, 312, 384, 985
Brooklyn, Poly. Inst. of..73, 154, 312, 384, 456, 528, 985
Bucknell Univ.....73, 236, 384, 528
Calif. Inst. of Tech..73, 236, 312, 384, 456, 528, 985
Calif. Univ. of..73, 236, 312, 381, 384, 454, 456, 916, 985
Carnegie Inst. of Tech.....155, 456, 985
Case Sch. of Ap. Science....236, 312, 528, 985
Catholic Univ. of America.....73, 155, 986
Cincinnati, Univ. of....155, 236, 384, 456, 526, 986
Clarkson Col. of Tech..73, 236, 384, 456, 528, 986
Clemson Agri. Col.....73, 312, 528, 917
Colorado State Agri. Col..73, 155, 236, 312, 384, 456, 528, 986
Colorado, Univ. of..73, 236, 312, 456, 693, 986
Cooper Union.....73, 236, 312, 384
Cornell Univ.....73, 312, 384, 457
Denver, Univ. of.....155, 312, 528, 917, 986
Detroit, Univ. of.....155, 312, 384, 529
Drexel Inst.....73, 236, 312, 381, 457, 986
Duke Univ.....73, 457, 986
Florida, Univ. of 73, 155, 236, 312, 457, 529, 986
Georgia Sch. of Tech.....73, 312, 457, 986
Harvard Univ.....73, 312, 380, 384, 457, 529
Idaho, Univ. of.....312, 986
Illinois, Univ. of.....454, 986
Iowa State Col.....236, 384, 529, 986
Iowa, State Univ. of..73, 155, 236, 384, 457, 986
Kansas State Col...73, 236, 312, 374, 457, 529, 986
Kansas, Univ. of.....74, 155, 313, 457, 917
Kentucky, Univ. of.....74, 313, 917, 986
Lafayette Col.....313, 381, 457, 986
Lehigh Univ...74, 155, 381, 384, 527, 529, 986
Lewis Inst.....74, 236, 457, 529, 693, 986
Louisiana State Univ.....986
Louisville, Univ. of.....313, 457, 917, 986
Maine, Univ. of.....155, 457
Marquette Univ.....74, 155, 313, 384, 457
Massachusetts Inst. of Tech..74, 155, 236, 236, 313, 380, 384, 457, 986
Michigan Col. of Mining and Tech.74, 155, 236, 313, 384, 457, 986
Michigan State Col.236, 313, 385, 457, 529, 987
Michigan, Univ. of..74, 155, 236, 385, 457, 529, 987
Milwaukee, Sch. of Engg. of..74, 155, 236, 313, 457, 529, 987
Minnesota, Univ. of.....237, 529, 987
Mississippi Agri. & Mech. Col....155, 237, 385, 529, 987
Missouri Sch. of Mines & Met..74, 237, 313, 385, 457, 917
Missouri, Univ. of..74, 155, 237, 313, 529, 917, 987
Montana State Col..74, 155, 237, 313, 385, 457, 529, 987
Nebraska, Univ. of..74, 155, 237, 313, 380, 385, 529, 917
Nevada, Univ of.....237, 313, 385, 458, 529
Newark Col. of Engg...74, 155, 237, 313, 385, 458, 917, 987
New Mexico, Univ. of..75, 155, 314, 385, 529, 987
New Hampshire, Univ. of...74, 313, 385, 458, 529
New York, Col. of the City of...237, 314, 385, 458, 529, 693, 987
New York Univ.....75, 237, 385, 987
North Carolina State Col...75, 156, 237, 385, 458, 987
North Carolina, Univ. of..156, 237, 314, 458, 529, 917, 987
North Dakota Agri. Col...75, 237, 314, 385, 458, 529, 987
North Dakota, Univ. of..75, 237, 314, 385, 458, 530, 987
Northeastern Univ.....75, 156, 237, 380, 385
Notre Dame, Univ. of..75, 156, 237, 314, 385, 458, 530, 988
Ohio Northern Univ....75, 237, 314, 385, 530
Ohio State Univ.....237, 314, 530, 988
Ohio Univ.....75, 156, 238, 314, 385, 530, 988
Oklahoma Agri. & Mech. Col..75, 156, 238, 314, 385, 458, 526, 988
Oklahoma, Univ. of.....238, 385, 526
Oregon State Col..75, 156, 238, 314, 385, 458, 530, 988
Pennsylvania State Col...75, 386, 458, 530, 917
Pennsylvania, Univ. of.....75, 314, 381, 386
Pittsburgh, Univ. of.....75, 238, 988
Pratt Inst...75, 156, 238, 314, 386, 458, 917, 988
Princeton Univ.....75, 156, 381
Purdue Univ....75, 156, 314, 454, 458, 530, 988
Rensselaer Poly. Inst....75, 156, 314, 386, 988
Rhode Island State Col...75, 238, 386, 458, 530
Rice Inst.....458, 530, 917, 988
Rose Poly. Inst.....75, 314, 454, 988
Rutgers Univ.....76, 238, 988
Santa Clara, Univ. of.76, 314, 381, 454, 458, 988
South Carolina, Univ. of..76, 156, 238, 314, 386, 458, 530, 917, 988
South Dakota State Sch. of Mines..76, 156, 238, 386, 458, 988
South Dakota, Univ. of.....380
Southern California, Univ. of..76, 156, 238, 314, 386, 530, 988
Southern Methodist Univ.76, 156, 386, 693, 917
Stanford Univ...76, 156, 238, 315, 381, 454, 530, 988
Stevens Inst. of Tech....156, 315, 386, 458, 988
Swarthmore Col.....156, 381
Syracuse Univ.....76, 156, 238, 315, 386, 458
Tennessee, Univ. of..76, 238, 315, 386, 530, 988
Texas Agri. & Mech. Col.....76, 156, 988
Texas Tech. Col.....76, 989
Texas, Univ. of..76, 156, 238, 315, 386, 458, 530
Utah, Univ. of.....76, 315, 459, 526, 989
Vermont, Univ. of..76, 156, 238, 315, 386, 459, 917, 990
Virginia Military Inst.76, 315, 386, 459, 917, 989
Virginia Poly. Inst..77, 238, 315, 386, 459, 530, 917, 989
Virginia, Univ. of.....77, 238, 459, 989
Washington, State Col. of..77, 238, 315, 386, 459, 530, 693, 989
Washington, Univ. of.77, 156, 238, 386, 459, 989
Washington Univ..77, 156, 238, 315, 386, 459, 530, 989
West Virginia Univ.230, 315, 386, 459, 530, 917, 989
Wisconsin, Univ. of.....315, 387, 530, 989
Worcester Poly. Inst.....387
Wyoming, Univ. of..77, 239, 315, 387, 459, 989
Yale Univ.....77, 239, 315, 387, 459

MEETINGS, DIRECTORS':

Asheville, N. C., June 24, 1931.....684
Kansas City, October 23, 1931.....974
New York, December 4, 1930.....57
New York, January 28, 1931.....225
New York, May 19, 1931.....447
New York, August 4, 1931.....759
Pittsburgh, March 12.....299

MEETINGS, DISTRICT:

District No. 1 Executive Committee Convenes at Schenectady.....981
District No. 2 Executive Committee Meets at Pittsburgh.....914
District No. 5 Executive Committee Meets at Chicago.....982
District No. 6 Executive Committee Meets at Omaha.....914
District No. 6 Holds Student Activities Conference.....454
Kansas City, October 1931.
District 7 Executive Committee Convenes at Kansas City.....974
Kansas City District Meeting Well Attended.....973
Kansas City Host to October Meeting...679
Last Call for Kansas City Meeting.....834
South West District to Meet Kansas City 757
Louisville, November 1930.
Louisville District meeting.....56
Philadelphia, October 1930.
District Prizes Awarded at Philadelphia Meeting.....60
Pittsburgh, March 1931.
A-C. Network, Industrial Connections, System Grounding Are Subjects of Pittsburgh Meeting.....296
Middle Eastern District Meeting Program.....138
Students Active at Pittsburgh Meeting..298
Summary of Some Pittsburgh Discussions 372
Rochester, May 1931.
District Executive Committee Meets at Rochester, N. Y.....444
North Eastern District Holds Busy Session at Rochester.....441
North Eastern District Meets at Rochester. 230
Rochester Meeting Features Noise Abatement and Lightning Studies (Rochester Meeting Program).....302
Student Activities Conference Held at Rochester.....444
Summary of Some Rochester Discussions. 445

MEETINGS, NATIONAL:

Pacific Coast Convention 1931
District Executive Committees Meet....834
Grunsky (C. E.) to Speak.....371
Plan Your Vacation to Include the Lake Tahoe Convention.....304, 449
Plans Announced.....140
President Skinner Traces Trend of Electrical Engineering.....833

Student Activities Discussed 834
Summarized Review of Some Discussions 835
Tahoe Convention 679
To be Reported 769
"Vacation Convention" a Noteworthy Success 832
Will You Take Your Vacation at the Lake Tahoe Convention? 514
Summer Convention 1931.
Asheville Convention. (Full report) 517
Lamme Medal Presented 685
Minutes of Annual Meeting, June 22 522
Officers, Delegates, and Members Sessions .. 679
Program announced 368
Summarized Review of Some Discussions 681
Summer Convention 440
Summer Convention at Asheville, N. C.. 304
Valuable Trophies Won in Sports 761
Winter Convention 1931
Program Announced 50
Some Discussions Summarized 226, 299
Ten Technical Sessions Reported. (Full report) 216
To be Reported Upon 143
Winter Convention 1932.
Plans Announced 908
Presents Elaborate Program 971

MEETINGS, SECTION
Akron 71, 152, 234, 309, 382, 527
Atlanta 71, 234, 309, 382
Baltimore 71, 152, 309, 382, 454, 526, 983
Birmingham 454
Boston 71, 152, 234, 380, 455, 527, 915
Chicago 915, 982, 983
Cincinnati 71, 234, 309, 526, 527, 915
Cleveland 71, 234, 309, 382, 455, 692, 983
Columbus 152, 234, 309, 455, 692, 983
Connecticut .. 71, 152, 234, 309, 382, 455, 527, 983
Dallas 152, 310, 382, 455, 527, 915, 983
Denver .. 71, 152, 234, 310, 382, 455, 527, 915, 983
Detroit-Ann Arbor .. 71, 152, 310, 382, 455, 527, 692, 915, 983
Erie 71, 234, 382, 527, 916, 983
Florida 454
Ft. Wayne 71, 152, 234, 382, 455, 983
Houston 71, 152, 382, 527, 916, 983
Indianapolis-Laf .. 71, 234, 310, 382, 455, 527, 983
Iowa 310, 455, 527
Ithaca 153, 234, 310, 455, 527
Kansas City 153, 234, 382, 692, 984
Lehigh Valley 153, 310, 382, 455, 527, 984
Los Angeles .. 71, 153, 234, 310, 382, 455, 527, 916, 984
Louisville .. 71, 153, 310, 383, 455, 527, 916, 984
Lynn 455, 984
Madison 153, 234, 310, 383, 455, 692, 984
Memphis .. 71, 153, 234, 310, 383, 527, 916, 984
Mexico 71, 234, 455, 916
Milwaukee 234, 383, 527
Minnesota 153, 235, 310, 383, 455, 916, 984
Montana 842
Nebraska 71, 235, 380, 984
New York .. 69, 151, 152, 233, 305, 908, 915
North Carolina 383
Niagara Frontier .. 71, 153, 235, 310, 383, 455, 528, 916, 984
Oklahoma City .. 72, 153, 310, 383, 455, 526, 916
Philadelphia .. 72, 153, 235, 310, 381, 455, 528, 984
Pittsfield 72, 153, 235, 310, 381
Pittsburgh .. 72, 153, 235, 310, 455, 528, 916, 984
Portland, Ore .. 235, 310, 455, 692, 842, 916, 984
Providence 235, 455
Rochester 153, 310, 383, 456, 528, 984
San Antonio .. 72, 153, 235, 311, 383, 456, 916, 984
San Francisco .. 72, 235, 381, 383, 454, 528, 916
Saskatchewan 72, 383, 984
Schenectady 153, 311, 381, 383
Seattle 72, 153, 235, 383, 528, 984
Sharon 72, 153, 235, 311, 456, 528, 916, 984
Southern Virginia 308, 984
Spokane 72, 235, 311, 383, 456, 916, 984
Springfield, Mass 72, 153, 456, 985
Syracuse 235, 383
St. Louis .. 72, 153, 235, 311, 383, 456, 916, 984
Toledo .. 72, 154, 235, 311, 383, 456, 528, 692, 916, 985
Toronto .. 72, 154, 235, 311, 380, 383, 456, 916, 985
Urbana 72, 154, 235, 311, 383, 692, 985
Utah .. 72, 154, 235, 311, 383, 456, 526, 916, 985
Vancouver .. 154, 235, 311, 456, 692, 842, 916, 985
Washington .. 72, 154, 235, 311, 456, 528, 985
Worcester 72, 154, 311, 383, 456, 692, 985

Members (See Biographical Index)
Middle Eastern (No. 2) District meeting. (See Meetings, District)
Membership, Transfers and Elections .. 79, 164, 241, 318, 389, 461, 534, 690, 769, 848, 919, 991
Mershon Trophy Winners 761

N

National Meetings. (See Meetings, National)
Nominating Committee Announces Official Candidates for 1931 53
Nomination of 1932 Institute Officers .. 837, 907
North Eastern (No. 3) District Meeting. (See Meetings, District)

O

Obituary Notices. (See Biographical Index)
Officers and Committees
Branches 85, 169, 250, 775
District 84, 168, 248, 774
National 81, 167, 248, 771
Sections 84, 189, 249, 774
Officers, nominations for 1931 53
Officers, rules governing nomination of 1932 candidates 837

P

Pacific Coast Convention (See Meetings, National)
Papers, Institute Prize Awards Announced for 1930 448
Personal items (See Biographical Index)
Pittsburgh (No. 2) District meeting. (See Meetings, District)
Policy Committee Appointed, Institute 523
Prize Awards Announced for 1930 Papers, Institute 448
Prize Winners (1930), North Eastern District 351
Prizes, Baltimore Section Awards 526

R

Reports, Technical Committee. (See Tech. Subj. Index)
Rail Committee Reports Further Progress, Welded 839
Rochester (No. 3) District meeting. (See Meetings, District)

S

Section officers. (See Officers)
Slichter, W.I., Elected; Treasurer Hamilton Resigns 58
Southern (No. 4) District meeting. (See Meetings, District)
South Western (No. 7) District meeting. (See Meetings, District)
Standards
American Standards for Wood Poles Approved 845
Graphical Symbols for Electric Traction Proposed 689
Mercury Arc Rectifiers 976
Relay Standards Report Available 845
Revised Report on Proposed Lightning Arrester Standards 306
Several Projects Referred to New Committee 845
Sound Measurement Committee Authorized 976
Standardization Projects Reviewed 63
Weatherproof and Heat-Resisting Wire and Cable Specifications Approved 306
Student Branch officers and counselors. (See Officers)
Summer convention. (See Meetings, National)

T

Tahoe (Pacific Coast) convention. (See Meetings, National)
Technical Committee Reports. (See Tech. Subj. Index)
Transactions; a request for missing volumes 376
Treasurer Hamilton Resigns W.I.Slichter Elected 58

W

Welded Rail Committee Reports Further Progress 839
Winners of the Mershon Trophy 761
Winter convention (See Meetings, National)

Y

Year-Book (1931) Now Available 303

Division III(b)—News General and Departmental

A.A.A.S. and Associates Plan Week of Meetings 371
Administrative Engineering 908
Aircraft Radio Development Continues 145
Airplanes Carry South American Freight ... 762
"American Bells" of Louvain in Summer Concert 685
American Chemical Society
A.C.Langmuir Prize Awarded to Dr. Pauling 762
Important Meeting in Birmingham 304
American Engineering Council
Board Holds Fall Meeting 977
Engineers Aid Hoover's Employment Committee 147
Officers Elected at Annual Meeting; Business Stabilization Plans Discussed 148
Oil Pollution of Water Reported on Decline 763
Plans Unemployment Relief 976
Professional Committee Appointed to Study Engineer Licensing 53
St. Lawrence Project Reviewed 977
Will Participate in Washington Celebration 147
American Institute of Electrical Engineers. (See A.I.E.E. Activities)
Am. Inst. of Mining and Metallurgical Engrs.
Register Another Successful Annual Meeting 230
Report Upon Russian Living Conditions .. 374
American-Scandinavian Fellowships Due for Consideration 144
Annual Safety Congress to be Most Extensive 838
Architects Study Simplified Practices 839
"Around the World on Light's Golden Jubilee" Souvenir booklet 688
American Society of Civil Engineers.
Noble Prize Awarded 907
Elect Francis Lee Stuart president 146
American Society of Mechanical Engineers.
Awards Honorary Membership to Dr. Elihu Thomson 63
Memorable Meeting Held 58
Important Meeting at Birmingham 304
American Society for Testing Materials.
Announces New Officers and Activities ... 687
Meets in Pittsburgh 228
To Exhibit Testing Apparatus and Machines 371
American Standards Association.
Bancroft Gherardi chosen president 62
New National Safety Code for Elevators. 845
New Standard Regulations for Signaling Systems 844
Releases Refrigeration Safety Code 304

Safety Code for Coal Mine Transportation ... 845
Specifications for Code Rubber Approved 306
Specifications for Dry Cells and Batteries 306
Astro-Physics Laboratory, "Cal.-Tech." to Have ... 61

B

Bagnell Dam and Semi-Outdoor House of the Union Elec. Lt. and Pwr. Co. (Photo only) ... 757
Bagnell Dam, Outdoor Generators for ... 376
Biggest Radio Tube ... 62
Blight of Price, The ... 686
Business Conditions Reflected by "Indicators" ... 229

C

Caldwell, O. H., shows biggest Radio Tube. 62
"Cal.-Tech." to Have Astro-Physics Laboratory ... 61
Can Power Come from Tropic Seas? ... 62
Census (1929) of Manufacturers for Electrical Apparatus Show 39% Increase ... 142
"Century of Progress" Electrical Group (Photo) ... 762
Chemical Exposition to be Held in New York ... 303
Chemical Research, A. C. Langmuir Prize Awarded ... 762
Chicago, Midwest Power Conference Meets at ... 145
Cleveland's New Stadium Floodlighted ... 686
Coffin Award Won by Virginia Electric ... 687
Coffin Fellowships Awarded to College Graduates ... 449
Columbia University Offers E.E. Scholarships ... 144
Committee on Electrical Insulation Meeting of ... 938
Compton, Dr. K. T., Receives Rumford Medal ... 688
Congress Available for Wide Service, Library of ... 685
Congress of Elec. Engrs., South American ... 839
Convention, N.E.L.A. Annual ... 330
Copyright Bill Recommended, Vestal ... 146
Crompton, Col. R.E.B., honored in London ... 911
(Curtis, A. D.) Lighting Pioneer Dies on Pacific Coast ... 447

D

Deutsches Museum, Edison Bust for ... 59, 446
Dielectric Research to Reveal Fundamental Properties ... 306
Doherty, H.L. Finances Unemployment Research ... 837

E

East River Tube Projected for New York ... 146
Education Research Committee Established 377
E.E. Degree, Who Received the First? ... 448
Electric Furnaces Improved for Iron and Steel Plants. (Electrochem. Soc.) ... 907
Electric Steam Generator for Sterilization Processes ... 375
Electrical Apparatus Show 39% Increase, 1929 Census of Manufacturers for ... 142
Electrical Congress to be Held in Paris ... 838
Electrical Engineering, Half Century of ... 58
Employment Committee, Engineers Aid Hoover's ... 147
Employment Notes. (Engg. Societies service) ... 77, 162, 239, 316, 387, 459, 531, 693, 767, 846, 918, 989
Engineer Licensing, Professional Committee Appointed to Study ... 53
Engineering Foundation
Ambrose Swasey Gives $250,000 More ... 689
Bequest of Edwin H. McHenry ... 844
Dielectric Research to Reveal Fundamental Properties ... 306
Education Research Committee Established ... 377
Foundation Sponsors Publication Program ... 689
Progress Discussed at Recent Meeting ... 976
Research Narratives (See Tech. Subj. Index, and Letters to the Editor)
Symposium "Has Man Benefited by Engineering Progress?" (See Tech. Subj. Index, and Letters to the Editor)
Welding Research Aided by Foundation. 306
Engineering Literature (See Literature, Engineering)
Engineering Progress, Has Man Benefited by? (Letters): Dreher, Carl ... 766
Jansky, C.M ... 766
Johnson, W.C., Jr ... 766
Lobo, G ... 840
Moody, W.S ... 978
Vogel, Orrin S ... 766
Weller, C.T ... 910
Engineers' Economic Conference to be Held by Stevens Institute ... 373
Executives to Visit Research Laboratories .. 838

F

Faraday Centenary Meeting (N. Y.) Well Attended ... 975
Faraday Centennial to be Held in London .. 760
Fellowships. (See also Scholarships)
Fellowships Awarded to College Graduates, Coffin ... 449
Fellowships Due for Consideration, American-Scandinavian ... 144
Fellowships, Lehigh Univ. Announces ... 144
(Fellowships) Univ. of Illinois offers research assistantships ... 229
Fellowships, Yale Again Offers the Sterling. 144
Floodlighted, Cleveland's New Stadium ... 686
Floodlighting at Sea ... 445
Floodlighting at Wanaque Dam, Spectacular ... 683
Freight, Airplanes Carry South American .. 762
Fritz Gold Medal Awarded Admiral Taylor. 62

G

Generators for New Bagnell Dam, Outdoor. 376
George Washington Bridge (N. Y.—N. J.) to be Well Lighted ... 688
Gherardi, Bancroft, chosen president of A.S.A. ... 62

H

Half Century of Electrical Engineering ... 58
Has Man Benefited by Engineering Progress? (Letters) (See Engineering Progress)
(Hydro) Saluda Completed to 162,500 Kva. Capacity ... 375

I

Illinois, Univ. of, Offers Research Assistantships ... 229
Illuminating Engineering Society
Holds "Silver Anniversary" ... 838
Meet in October (1931) ... 761
School Lighting Code Under Revision ... 976
Illumination Commission to Meet in England, International ... 59
Engineers Welcome at International Congress, England ... 304
Indoor Tower Tests ... 838
"Industrial Accident Statistics." (Nat. Safety Council booklet) ... 688
Industrial Notes ... 88, 172, 252, 324, 396, 468, 540, 702, 782, 850, 926, 998
Insulation, Meeting of Committee on Electrical ... 839
Inter-Society Cooperation Urged to Expedite Noise-Study Agreement ... 443
International Electrotechnical Commission Announces Revision of Electrical Machinery Rules ... 377
Plans for 1932 Paris Congress ... 686, 838
Units and Definitions as Adopted ... 141
Irrigation Waste to Run Texas Plant ... 516
Iron and Steel Plants, Electric Furnaces Improved for ... 907

J

Japanese Professor Arrives for Study of Electronics ... 146

L

Laboratory Lighting at Penn State, Special 376
Lamme Medals. (See A.I.E.E.—Medals)
Lamp Calculation "Slide Rule" for ... 680
Lamp Makes Photography Safe, New Photoflash ... 63
Langmuir Prize in Chemical Research Awarded, A.C. ... 762
Lehigh University Announces Fellowships. 144
Lehigh University Holds Welding Symposium ... 220
Leonard-Ray Tube Window. (Slack, C.M.) 688
Letters to the Editor
A Note on Symmetrical Components. de la Garza ... 910
Concerning Voice Training. Button ... 840
Corona and Line Surges. Bewley ... 910
Edison's Greatest Work. Sprague ... 977
Has Man Benefited by Engineering Progress? (See Engineering Progress)
Library of Congress Available for Wide Service ... 685
Library Reports on Service, Societies' ... 688
Licensing, Professional Committee Appointed to Study Engineer ... 53
Light and Vision ... 440
Lighting at Penn. State, Special Laboratory 376
Lightning Generator at Purdue University. 688
(Lightning) Indoor Tower Tests. (Photo) .. 838
"Light's Golden Jubilee, Around the World on" ... 688
Literature, Engineering
Engineering Index ... 64, 158, 244, 320, 392, 464, 536, 698, 778, 852, 922, 994
New Books ... 68, 157, 242, 318, 390, 462, 535, 697, 776, 849, 921, 993
Louvain in Summer Concert, "American Bells" of ... 685

M

McHenry, Bequest of Edwin H. (to Engg. Foundation ... 844
Manufacturers for Electrical Apparatus Show 39% Increase, 1929 Census of ... 142
Medal, Dr.K.T.Compton Receives Rumford ... 688
Medals. (See Medals—under A.I.E.E. Activities)
Midwest Power Conference Meets at Chicago in February ... 145
Millikan (Dr.) Predicts Added use of Sun's Rays ... 61
Montefiore Prize Award Now Open, Triennial ... 376

N

(National Safety Council) "Industrial Accident Statistics" ... 688
N.E.L.A. Annual Convention ... 376
New York City Area, Nearly 14 Million Miles Phone Wire in ... 146
New York, East River Tube Projected for .. 146
New York Electrical Association Elects New Officers ... 147
Niesz, Homer Eldredge (died) ... 762
Noble Prize Awarded by A.S.C.E. ... 907
Noise Given Technical Attention, Subway. 144
Noise Study Agreement, Inter-Society Cooperation Urges to Expedite ... 443

P

Photoelectric Cell Controls Street Lights ... 762
Photoflash Lamp Makes Photography Safe, New ... 63
Polish Engineering Secretary Visits U.S. ... 761
Power Come From Tropic Seas, Can? ... 62
Power Conference Meets at Chicago, Midwest ... 145
Price, The Blight of. (Radio) ... 686
Prize Award Now Open, Triennial Montefiore ... 376
Prize Contest Announced, Welding Essay .. 143
Prize in chemical research awarded to Dr. Paulding, A.C. Langmuir ... 762
Professional Committee Appointed to Study Engineer Licensing ... 53

Progress, Has Man Benefited by Engineering? (Letters) (See Engg. Progress)
Purdue Univ., Lightning Generator at..... 688
Purdue University Receives Airport Site... 376

R

(Radio) Blight of Price, The..... 686
Radio Development Continues, Airplane... 145
Radio Phone Demonstrated by Fire Boat, Two-Way..... 61
Radio Programs, Shall Advertising Menace? 145
(Radio) Shall it be Price or Quality?..... 686
Radio Tube, Biggest..... 62
Rear-Mounted Automobile Engine is Predicted..... 687
Research Aided by Engg. Foundation, Welding..... 306
Research Assistantships Offered by University of Illinois..... 229
Research Committee Established in Education..... 377
Research Laboratories, Executives to Visit. 838
Research to Reveal Fundamental Properties, Dielectric..... 306
Rutgers University Plans European Tours.. 228

S

S.A.E. Meeting Discusses Novel Plans..... 687
Safety Congress to be Extensive, Annual... 838
Safety Council Booklet "Industrial Accident Statistics"..... 688
Saluda Completed to 162,500 Kva. Capacity..... 375
San Antonio Now Has High-Pressure Plant. 147
Saunders, W. L., Comes to End of Active Life..... 637
Scholarships. (See also Fellowships)
Scholarships, Columbia Univ. Offers E.E... 144
School of Welded Building Design..... 840
Shall Advertising Menace Radio Programs?..... 145
Shipboard, New Recommendations for Electricity on..... 146
Slack, C.M. (won prize)..... 688
South American Freight, Airplanes Carry.. 762
South American Congress of Electrical Engineers..... 839
Standards. (See various organizations)
Standards, Miscellaneous.
Conductivity of Threaded Connections.. 61
How to Obtain the New Standards Yearbook. (U.S. Bu. Stds.)..... 377
New Standards Data. (Am. Inst. Wts. & Meas.)..... 377
(Steam Plants) San Antonio Now Has High Pressure Plant..... 147
Stevens Institute, Engineers' Economic Conference to be Held by..... 373
St. Lawrence Commission Wants Immediate Action..... 145
St. Lawrence Project Reviewed (by A.E.C.) 977
(Stratton, S.W.) Leading Educator Dies... 908
Street Lights, Photoelectric Cell Controls.. 762
Stuart, Francis Lee, elected president A.S.C.E..... 146
Substation is Built in 70 Working Days..... 221
Subway Noise Given Technical Attention.. 144
Sun's Rays, Dr. Millikan Predicts Added Use of..... 61
Swasey, Ambrose gives $250,000 more to Engg. Foundation..... 689

T

Taylor, John Fritz Medal Awarded to Admiral..... 62
(Telephones) Nearly 14 Million Miles Phone Wire in New York Area..... 146
Television Again Demonstrated..... 147
Texas Plant, Irrigation Waste to Run..... 516
Thomson (Dr. Elihu) made A.S.M.E. Honorary Member..... 63
Train Brakes, Secret-Ray Light Applies.... 762
Transportation in Electrical Construction (Photo Mokelumne River, Calif.)..... 680
Truck for Line Crew, New Type of..... 836
Tube the Equivalent $5 Billion of Radium, A..... 62

U

Unemployment Research, H. L. Doherty Finances..... 837
Unemployment Relief, A.E.C. Plans..... 976
Unemployment Relief Plans Well Under Way..... 975
United Engineering Trustees, Inc., Annual Report Issued by..... 305
Units and Definitions Adopted by International Electrotechnical Commission. 141

V

Vestal Copyright Bill Recommended..... 146
V.D.I. Celebrates its 74th Anniversary..... 449
Vision, Light and..... 449
Voice Training, Concerning. Button. (Letter)..... 840

W

Wanaque Dam (N. J.), Spectacular Floodlighting at..... 683
Washington Award Made to Ralph Modjeska..... 304
Washington Celebration, A.E.C. Will Participate in..... 147
Watch, Non-Magnetic..... 839
Water Reported on Decline, Oil Pollution of 763
Welded Building Design, School of..... 840
Welding Essay Prize Contest Announced... 143
Welding Research Aided by Engg. Foundation..... 306
Welding Symposium, Lehigh Univ. Holds.. 229
Who Received the First E. E. Degree?..... 448
"Who's Who in Engineering"..... 523

X

X-Ray Screw Driver, $5,000..... 146

Y

Yale Again Offers the Sterling Fellowships.. 144

Division IV—
Biographical Index

Includes all Personal and Obituary Items

Abbott, W.M..... 690
Acheson, Edward G..... 691
Adams, Edward Dean..... 452
Airey, Frank J.....307, 525
Aldridge, T.H.U..... 525
Allen, Claxton E.....68, 912
Allen, R.W..... 690
Allen, Winthrop..... 912
Alverson, Harry B..... 232
Ambler, Nathan B..... 380
Anderson, H.H..... 912
Andrus, L.B..... 764
Armitage, L.C..... 525
Arnold, B.M..... 980

B

Baker, Clark E..... 453
Ballock, R.H..... 979
Barnes, H.H..... 842
Barre, H.A..... 913
Baxter, C.E..... 979
Bayle, R.M..... 980
Bean, R.D.....525, 764
Behrend, B.A..... 378
Bettis, Alex E..... 451
Bijur, Joseph..... 914
Blagoveschensky, Leo M..... 843
Bliss, W.H..... 691
Blondel, Andre E..... 911
Blondin, Jos. T..... 453
Bodde, Theodore..... 843
Bose, S.N..... 980
Bourke, L.J..... 378
Brand, F.F..... 150
Briggs, Jr., H.B..... 913
Brock, George..... 691
Bronold, A.J..... 913
Brown, A.S..... 764
Burrill, Charles M..... 690
Bushnell, Oliver Jackson..... 914

C

Callahan, William F..... 836
Calvert, Harold..... 912
Cargo, L.M.....232, 843
Cereceda, J.H..... 450
Champlain, C.H..... 690
Chapman, A.B..... 913
Chellis, G.F..... 690
Chewning, V.O..... 308
Chitty, A.M.....379, 451
Christiansen, K.C..... 379
Chubb, L.W..... 53
Chubbuck, H.Eugene..... 535
Chubbuck, L.B..... 55
Clark, W.N..... 979
Clarkson, William B..... 63
Clegg, T.H..... 534
Clem, J.E..... *451
Cole, G.H..... 150
Condon, Edward James..... 843
Conlon, W.S..... 150
Connette, Edward G..... 150
Conrad, Frank.....*80, *216
Copley, A.W..... 55
Corbin, J.G..... 232
Cotton, R.L..... 913
Covey, G.Stanley..... 151
Cree, George Gault..... 765
Crofoot, C.E..... 913
Crossman, A.H..... 308
Curtis, C.C..... 451

D

Darling, J.A..... 690
Davis, E.R..... 912
Davis, Harry Phillips..... 843
Dawes, C.L..... 763
Day, A.B..... 764
Day, Charles..... 452
Dean, Samuel W..... 151
DeForest, Lee..... *140
DeMars, P.A..... 913
Deming, Geo. E..... 232
Denton, F.M..... 534
deRziha, E..... 980
Dibbiee, John..... 379
Dinkey, Alva C..... 765
Doherty, H.L.....763, 837
Doherty, R.E..... *450
Dortort, I.K..... 843
Doub, C.L..... 232
Doyer, Hulbert..... 151
Duncan, McKee..... 453

E

Edgar, H.T.....451, 691
Edgar, C.L..... 912
Edison, Thomas Alva..... *004
Edstrom, J.S..... 452
Ennis, A.G..... 912
Evans, H.S..... 843

F

Farrow, P.R..... 979
Fawell, T.A.....63, 764
Felker, F.M..... 523
Fenninger, W.F..... 535
Finks, Garnett Holstein..... 913
Fischer, F.K..... *450
Ford, Bruce..... 765
Foster, William J..... *230
Freeman, Hadley F..... 307
Freeman, W.E..... 55

G

Gaylord, Truman P..... 691
Gherardi, Bancroft..... 63
Gifford, W.S.....525, 764, 842
Grant, A.J..... 913
Guillou, A.V..... 912
Gumbart, H.E..... 913
Gutzwiller, W.E..... 764

H

Hale, Robert S..... 232
Halpin, L.C..... 451

NOTE—An asterisk (*) before a page number denotes publication of photograph of individual on that page.

Hammond, W.P. 843
Hancock, M.S. 150
Harness, Jr., G.T. 764
Harries, G.H. 912
Hart, Eugene A. 151
Hendricks, A.B. 150
Herbruck, W.M. 764
Hester, E.A. 231
Hoadley, H.E. 979
Hodgkinson, Francis *378
Hoxie, Harvey H. 232
Huebner, O.E. 233
Hull, B.D. 56
Hunsicker, Harry J. 308
Hunt, Andrew M. 64

I

Inch, S.R. 307

J

Jackson, D.C. 764
Jacobs, Albert M. 307
James, W.F. 763
Jefferson, H.F. 979
Jonas, E.J. 450
Jones, B.M. 231, 450
Jones, C.G. 979

K

Kellogg, C.W. 378
Kelly, Ralph 690
Kennelly, A.E. 912
Kenslt, H.E.M. 690, 764
Kintner, S.M. 150, *450
Kittredge, Carlyle 525
Kolster, F.A. 979
Kouwenhoven, W.B. 54

L

Landis, Robert 843
Langan, T.R. 763
Larsen, S.P. 232
Law, Clarence L. 231
Law, R.R. 980
LeClear, Gifford 914
Leonard, A.W. 378
Leonard, H.C. 307
Lesser, W.H. 307
Levinger, D. 524
Lichtenberg, Chester 451
Lines, Stanley L.B. 452
Longley, F.R. *451
Loomis, E.W. 764
Lundie, John 232
Luckiesh, M. *378

M

MacAlpine, W.W. 913
Mackler, Louis 150
MacNeill, J.B. *307
Magalhaes, F.V. 524
Mahan, J.S. 913
Mallery, M.J. 979
Manahan, R.H. 452
Manby, A.W. 913
Manson, Ray H. *149
Marbury, R.E. 150
Marshall, Jr., R.C. 764
Marti, O.K. 764
Massenburg, W.B. 912
Mayo, Clarence A. 379
McCarter, R.D. 525
McCarthy, Edmund D. 63
McCarty, R.A. 63
McConahey, W.M. 150
McFarland, T.C. 764
McGrath, M.K. 525, 912
McGrath, W.H. 378, 451
McLaughlin, Elwood F. 232
Meigs, P.F. 980
Merrill, J.L. 980
Meyer, Frank J. 690
Meyerand, R.G. 764
Millikan, Robert A. 690
Montgomery, Douglas 231
Moody, W.S. 842
Moore, E.T. 690
Moore, R.W.E. *451
Morgan, T.H. 690, *912
Morris, E.H. 764
Morrison, G.K. 913
Muggli, John H. 379
Murphy, J.R. 232

N

Newbury, F.D. 63
Nicol, D.S. 979
Niesar, A.R. 451
Noertker, J.A. *60

O

Olsen, E.A. 451
Owens, R.W. 150

P

Pack, R.F. 524
Page, Roy 150
Parker, Karr 451
Patton, P.H. 55
Penard, Thomas E. 451
Perkins, T.S. 150, *307
Peters, O.S. 378
Pettee, A.D. 913
Phelon, J.O. 524
Phillips, F.R. 452
Plenge, Edw. B. 453
Poohar, S.L. 913
Preisel, E.A. 913
Priest, Edward Dwight 379
Prince, D.C. 306
Procter, C.L. 690
Proebstel, D.W. 307
Pupin, M.I. *911
Putman, H.V. 150

R

Ranger, Richard H. 231
Reid, Harry 690
Rice, C.W. 912, *979
Richards, William E. 765
Richhart, W.S. 764
Richmond, W.S. 453
Robertson, B.L. 525
Robinson, Dwight P. 911
Robinson, Lewis Taylor *980
Romander, H. 913
Roswell, C.M. 692
Ruffner, Charles F. 307
Russell, N.D. 979
Ryan, Harris J. 689

S

Sawyer, W.H. 979
Sclater, I.H. 150
Scott, Robert J. 379
Seyler, H.F.L.J. *60
Shreve, E.O. 306
Shuler, William 843, 913
Simmons, Donald M. 379
Skilling, Hugh H. 913
Skinner, C.E. 54, 524, 765, 833, 911
Slichter, Walter I. 56
Sloan, Mathew S. 232
Smith, Frank W. 231, 451
Smith, H.B. 524
Smith, William F. 691
Snyder, Otto 232
Specht, Hans G. 691
Stafford, H.E. 843
Stannard, Jay L. 525
Steele, Frank B. 231
Stephanus, A.D. 843
Stokes, Stanley 690
Stone, E.C. *231
Stratton, Samuel Wesley *908
Streamer, A.C. 842
Stephens, H.O. 150
Suydam, C.H. 980
Swasey, Ambrose 689
Swoish, W.R. 979
Swope, Gerard 451

T

Taubert, W.H. 691
Taylor, D.B. 979
Tenney, Jr., R.B. 979
Thomson, Elihu T. 63, 911
Thomas, M.A. 843
Trombetta, P. 979
Thornton, K.B. 764
Thornton, Jr., Frank 690

U

Ulanet, Herman 979

V

Vlessman, W. 913

W

Wall, Cyril Thomas 914
Walmsley, H.M. 308
Walter, O.W. 913
Watson, Ralph A. 691
Wells, Lewis Judson 765
Welsh, James W. 378
Wensley, R.J. 764
White, Bryon E. 232
Whitehead, J.B. *979
Whiting, Donald Fairfax 844
Whitney, W.R. 524
Wilde, S.F.M. 980
Wilkins, Roy 231
Willis, E.N. 912
Wills, H.L. 524
Wilson, Everitt W. 63
Wilson, Robert Lee 149
Wilson, Robert McRea 453
Winn, Lyman 912
Winograd, H. 843
Wolfe, H.C. 525
Wood, Henry G. 843
Wood, L.A.S. 379
Wood, Thos.S. 308
Woodrow, H.R. 56
Worden, Beverly L. 379
Wright, Arthur 762
Wright, G.I. 764
Wyman, M.B. 913

Y

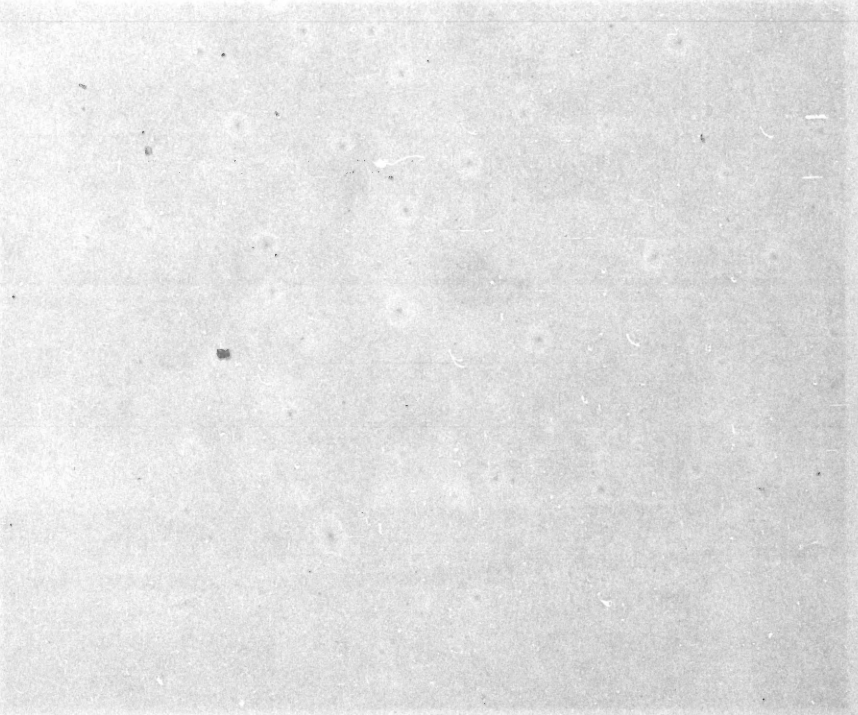
Young, J.W. 451
Young, W.M. 913

Z

Zwietusch, Edward Otto 843

Annual Reference Index

ELECTRICAL ENGINEERING

Volume 50 1931

Electrical Engineering